ONTARIO
SCHOOL GEOGRAPHY

PART I
THE PRINCIPLES OF GEOGRAPHY

PART II
THE GEOGRAPHY OF THE CONTINENTS

Authorized by the Minister of Education for Ontario for Use in
Forms IV and V of the Public Schools and in the
Continuation and High Schools

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THE PREFACE

THIS book is divided into two parts. In Part I the phenomena of earth, air, and sky are described in such a way as to lay the foundation for an intelligent study of the continents as places where men live and work. Part I is entitled "The Principles of Geography."

In Part II the physical features and the animals and plants are described and studied in the light of the principles discussed in Part I. The knowledge thus acquired is then used in the sections of the book devoted to man and his industries, in order that the pupil may realize how physical environment affects him socially, politically, and commercially. Part II is entitled "The Geography of the Continents." In this Part special emphasis has been placed upon commercial geography because of its practical value. The commercial importance and relations of the different countries are set forth with, as far as possible, the geographical reasons therefor. Toward the end of this Part, a map and sketch of the constituent parts of the British Empire have been given for convenient reference and review. The book closes with a summary of the world's commerce and industry, which will be revised from time to time as occasion may demand.

Maps. The continents and the Dominion of Canada are each represented by three sets of maps—physical maps, showing the land heights and water depths; political maps, giving the latest information with regard to boundaries and the situation of places; and commercial maps, showing the distribution of the leading products, the routes of domestic trades by land and water, and the principal oceanic routes.

Tables. For purposes of reference only, a number of commercial and other tables are given in the appendix. These statistics will also be revised from time to time in accordance with the census returns.

Proper Names. For the spelling of proper names in the Dominion of Canada the decisions of the Geographic Board of Canada have been adopted, both on the maps and in the text. In the case of other proper names, the decisions of the Royal Geographical Society of London have been adopted.

It is intended that the part of the text in larger type shall be studied in Form IV of the Public Schools, and that the part in smaller type shall be taken up along with the review of the course for Form IV. in Form V of the Public Schools, and the first year classes of High and Continuation Schools and Collegiate Institutes.

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A gorge in the Rocky Mountains.

ONTARIO SCHOOL GEOGRAPHY

PART I

THE PRINCIPLES OF GEOGRAPHY

I. INTRODUCTION

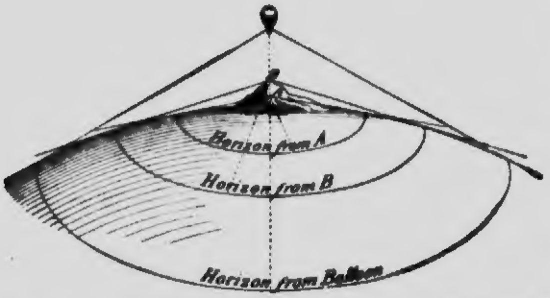
Meaning of Geography. The study of geography is the study of the earth and its relation to the plants, animals, and men that live on its surface. When we are learning about the climate and the people of the tropical forests of Central Africa or the wheat fields of Manitoba or about the explorations of Franklin, Nansen, or Peary in the far north, we are studying geography.

When we look for spring flowers on the sunny, sheltered side of a hill, rather than on the north side, or when we send reaping machines to Australia, or lumber to Great Britain, we are making use of our knowledge of geography.

Geographical Facts and Principles. Our study of geography shows us that certain facts are much more important to learn and to remember than others, because some are permanent while others are constantly changing. For instance, the population of Toronto or Montreal, or any other large place, changes daily; hence there is little to be gained from remembering the exact number of inhabitants in any city at a certain date. On the other hand, the location, the climate, soil, slopes, and drainage which have led men to build large cities at the places mentioned, are practically unchanging and are therefore important. Before the white man came, the Indians occupied the island on which Montreal stands; and for exactly the same reason as the white man — because it was a convenient place to gain their living. Such truths as these are more than mere facts. They are *principles*, for they are true without regard to time or place.

Value of Geographical Principles. In the first part of this book we are to study the more important principles of geography, because they will help us to understand the geographical conditions of the world, and will enable us to understand why men live and act in certain ways in one part of the world, and in different ways in another. Principles, or generalizations, are worked out through the study and comparison of facts. We can understand the principles, only when we know many facts from different parts of the world which serve to illustrate the principles.

For instance, we shall find the soil, the drainage, and the climate of Manitoba, Saskatchewan, and Alberta to be much alike. We shall find that these provinces produce great quantities of hard wheat. We may then very rightfully say that, wherever the conditions in other parts of the world are like those in these regions, hard wheat can easily be raised. With this principle in mind, it is not difficult to find out, from a study of the maps and texts, the possible areas in which hard wheat can be produced. In other words, a knowledge of the geographical conditions in one part of the world will help us to understand the geographical conditions in another.



A diagram showing the different horizons which may be seen from different elevations.

II. THE SHAPE AND SIZE OF THE EARTH

Materials of Which the Earth is Composed. The earth is a large globular mass of matter, the outer portion of which is what is known as rock. In the larger depressions of the rock surface there are great volumes of water, and over all is the air. The rocks, the water, the air, and all objects are held in their relative positions, because they are constantly drawn toward the centre of the earth by the force which we call gravity. The heavy rocks form the central mass, while the water, which is heavier than air, but lighter than rock, is drawn as near to the centre of the earth as the rock will allow it to go.

There is evidence that, as a result of great heat, the earth was once in a fused condition, and, as it cooled, what is known as the earth's crust was formed on the outside. This cooling process is still going on, but deep borings show that the temperature increases at such a rate that we are justified in believing that, at a depth of twenty-five or thirty miles, the heat would still be sufficient to melt any known substance. Volcanoes and hot springs also indicate great internal heat. It is probable, therefore, that the greater portion of the earth's interior, if not in a molten condition still, is in such a state that if the pressure were relieved it would at once become molten. In its various motions, however, the earth behaves as a solid ball, and Lord Kelvin gives his reasons for believing it to be as rigid as if it were made of solid steel.

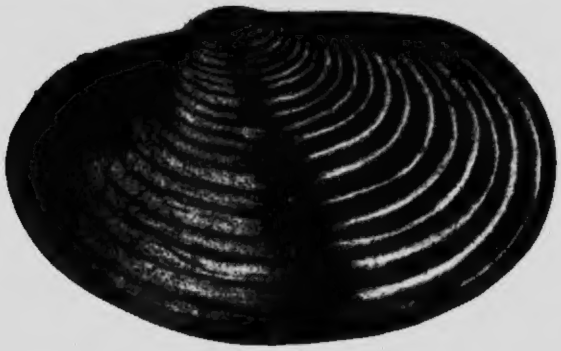
Igneous or Unstratified Rocks. When the earth's surface first cooled, the rock material would be in a shapeless mass having a rough, glassy appearance. Of this nature are the various kinds of granite, as well as the lava poured out on the surface or forced up in sheets between beds of other rocks. Rocks thus formed are known as *igneous* or *unstratified*, and most of them are very hard and dense.

Stratified Rocks. On the first appearance of a crust on the earth, only unstratified rocks would be formed, but as no rocks, however hard, can long withstand the action of heat, rain, air, etc., these rocks would soon begin to crumble and decay, forming vast quantities of powdered material. Some of this powdered material would form soil, while the remainder would be carried away by streams and rivers and deposited as layers of sediment in lakes or on the margins of oceans. In time, through the agency of pressure, heat, and chemical action, these layers or strata would become solidified and form what are known as *stratified rocks*. These rocks are very common and may be seen along the high banks of many lakes and rivers. They always show marks of bedding, the layers or strata having been laid down horizontally or nearly so. Fine muds form *shales*, sand forms *sandstone*, and gravel or pebbles form *conglomerate*. The stratified rocks also include rocks formed from the remains of animal or plant life; thus decayed vegetation forms *coal beds*, and the shells and skeletons of minute sea animals give rise to *chalk* and *limestone*.

Stratified Rock.

The fact, that the earth's crust is still continually rising in some places and sinking in others, explains why stratified rocks are often found high above water, notwithstanding the fact that they can be formed only under water.

Metamorphic or Changed Rocks. The character of both stratified and unstratified rocks may be changed by intense heat and pressure such as are present in great earth movements. In this way, granite becomes a rock called *gneiss*, which is very common in Northern Canada; the shale of stratified rocks becomes slate; sandstone becomes quartz; and limestone becomes marble. The bedding, though still evident, is disturbed and the strata are twisted into a great variety of shapes. Rocks so changed are known as *metamorphic*. To this class belong the surface rocks in Muskoka and Georgian Bay.



A Fossil.

Fossils. As the powdered and worn-down material which goes to form stratified rocks is being carried to the sea, the remains of plants and animals must often find their way there also, and must thus mingle with the sediment. Here they become changed into the same material as the rock, but retain for the most part their original shape. Such remains are known as *fossils*, and are of great value in estimating the relative age of the rock in which they are found.

The presence of fossils is one of the characteristics of stratified rocks; but, in the case of metamorphic rocks, the great changes undergone in their formation have destroyed practically all evidence of organic life, if indeed any ever existed in them.

A telephoto picture of a steamer six miles from shore. Notice that the vessel is disappearing behind the curvature of the earth.

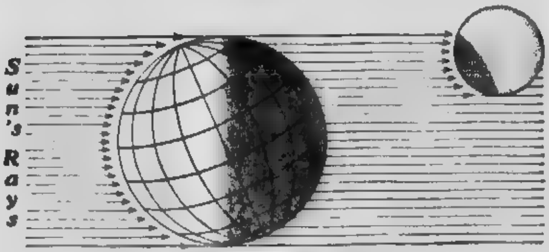
Shape of the Earth. The globular earth is so large that we can see very little of its surface at any one moment, and that little appears flat. If we climb a tree, or go up on a housetop, or ascend a mountain, we can see more of the earth's surface than we can from the ground. In all places, however, we see a line in the distance where the earth and sky seem to meet. That line is known as the *horizon*.

A ship on the sea, as it moves away from us, will disappear over the horizon. It passes over so large a part of the earth's surface that it gets out of sight on account of the earth's curvature. The last sign of a steamship leaving port is the smoke which has risen so high in the air that it is still visible when the vessel itself has disappeared.

The curvature of the earth is everywhere such that, if there are no obstructions, a boy whose eye is five feet above the earth loses sight of an object five feet high at a distance of about six miles. This is true in whatever direction the object is looked at; hence the shape of the earth is round like a globe, or sphere. That this is the shape of the earth is also proved by the fact that its shadow cast upon the moon is always circular. As a sphere is the only body that always casts a circular shadow, the earth must be globular, or spherical.

A telephoto picture of the same steamer about twelve miles from shore.

Importance of the Shape of the Earth. Owing to the shape of the earth, the attraction of gravity at the surface is everywhere the same. Hence, a man can walk over the level surface with the same ease everywhere. Birds can migrate from one part of the world to another without difficulty, because their



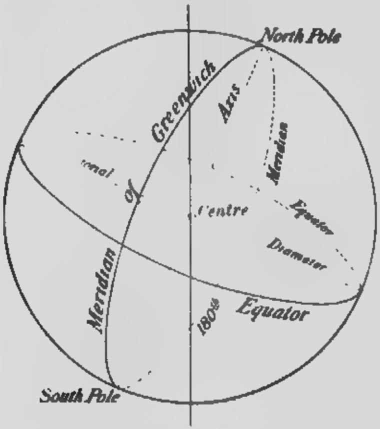
A diagram showing how the earth casts a circular shadow on the moon

weight is everywhere the same. Steam vessels and railway trains end their journeys with the same weight of freight as when they started.

Owing to the attraction of gravity, water or any other liquid is drawn toward the centre of the earth until it becomes *level*. When we refer to a surface of large area as being level, we do not mean that it is flat like the floor. We mean that it has no curvature other than the general curvature of the earth's surface.

By *up*, we mean away from the centre of the earth. So, people on the opposite side of the earth stand with their feet down and their heads up, just as we do.

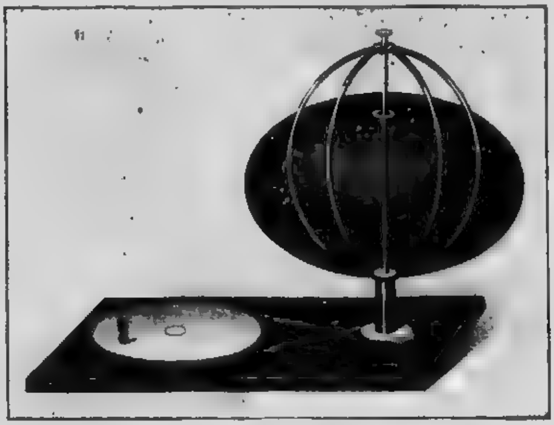
Size of the Earth. The exact size of the earth is of no great importance to us. To know that it is about 25,000 miles in circumference gives us some idea of the length of time required to go around it in a fast steamer, travelling 500 miles a day, if we could follow a straight path. But the earth is not quite a sphere, and the longest distance around it in a north and south direction is forty-two miles less than the longest distance around it in an east and west direction. The difference, however, is too small to be shown by a globe or by any drawing we can make.



A diagram of the earth showing the axis, the equator, the prime meridian, and the poles

The earth is usually classed as an oblate spheroid; that is, it is flattened at the poles and bulged out at the Equator, as indeed are all the other planets. As a result, degrees of latitude increase in length as one approaches the poles. In the north of Sweden, for example, a degree of latitude measures 3,000 feet more than in Peru. This is due to the flattening of the earth near the poles. And, as the flattening increases the force of gravity, a body weighs more near the Arctic Circle than at the Equator. For the same reason, a pendulum clock is found to gain time as it is moved from the Equator toward the poles.

The oblate spheroid form of the earth, which some of the other planets, such as Jupiter and Saturn, possess in a much greater degree, has been caused by its rapid rotation. When a plastic body is made to rotate rapidly, it bulges out where the motion is greatest and flattens where the motion is least. This may easily be shown by a simple experiment.



Effect of Rotation.

III. THE MOTIONS OF THE EARTH

Kinds of Motions. The earth is constantly in motion. It turns on its axis, or *rotates*, once in twenty-four hours; and it moves through the heavens, or *revolves* around the sun, in a fixed path once a year.

Rotation; the Earth's Axis; the Poles. The earth rotates daily about an *axis* or imaginary central line. The two extremities of this line on the earth's surface are known

The Western Hemisphere which contains North and South America.

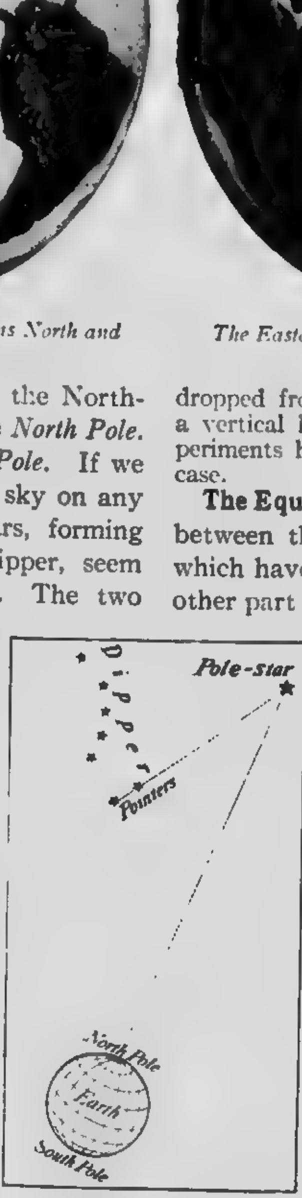
The Eastern Hemisphere which contains Eurasia, Africa, and Australia.

as the *Poles.* The pole nearest the North-star or Pole-star, is known as the *North Pole.* The opposite pole is the *South Pole.* If we watch the stars in the northern sky on any night, we see that certain stars, forming what is known as the Big Dipper, seem to swing around the Pole-star. The two stars, farthest from the handle are called the *pointers,* because a line connecting them always points in the direction of the Pole-star.

Either the sun and the stars must swing around the earth from east to west once every twenty-four hours, or the earth must rotate from west to east in the same time. For the following reasons, the latter supposition is the more probable. First, we have seen that the earth's rotation on its axis explains its present shape. Second, we know that the other planets rotate on their axes. Moreover, the earth's rotation may be proved as follows:—

If the earth turns from west to east, then the top of a high vertical tower must move faster than the base, and a body dropped from the top will fall a little east of a vertical line from the top to the base. Experiments have shown that this is actually the case.

The Equator; the Hemispheres. Half-way between the poles there is a line of places which have a faster rotary motion than any other part of the world. The imaginary line passing through these points, equally distant from the poles, forms the *equator.* The half of the world north of the equator is called the *Northern Hemisphere,* and the other half is known as the *Southern Hemisphere.*

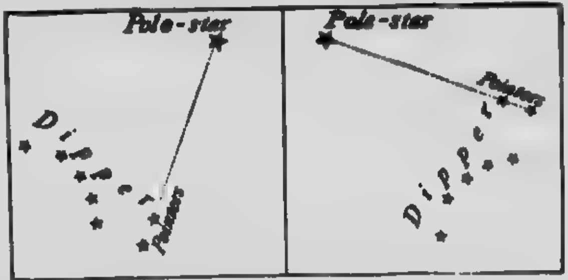


The axis of the earth and the pointers are each in line with the Pole-star.

Directions on the Earth. A line pointing toward the poles is a north-south lin[illegible] and a line at right angles [illegible] this is known as an east-west line. The points toward which these lines are directed, namely, north, east, south, and west, are called the *cardinal* points, and can be determined at night by finding the Pole-star, which always indicates the true north. Even uncivilized people know and use these four points.

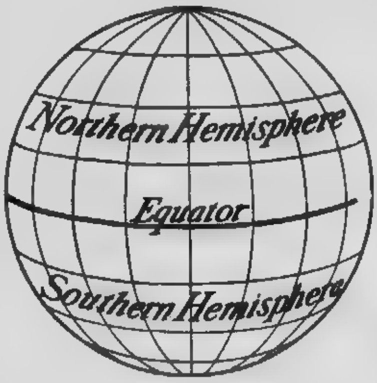
The Compass. Instead of telling direction by means of the sun or stars, an instrument called a *compass* is used. This instrument has a magnetic needle supported so as to swing about a point.

A magnetic needle will always come to rest so that one end points toward the *North Magnetic Pole.* If the north pole and the magnetic pole were the same, the compass would tell us the true north. The north magnetic pole is in northern Canada, and is some distance south of the north pole. Hence, it is necessary to know how much a compass varies from the true north, if we wish to measure direction accurately by means of it.



The apparent change in position of the Big Dipper in six hours. It seems to revolve around the Pole-star every twenty-four hours.

Daylight and Darkness. The earth, in its daily rotation, turns from west to east, so that the sun *seems* to move from east to west. The rate of rotation of the earth is usually measured by means of the sun. As the earth rotates toward the east, the place where we live turns first into sunlight and then into shadow, giving us day and night. Just before the sun appears in the eastern part of the sky, and just after it disappears in the western part, we have *twilight.* During twilight the sun is shining through the upper air, and its light is reflected to the earth, making it partly light, or twilight.



A diagram of the earth showing the equator and the hemispheres.

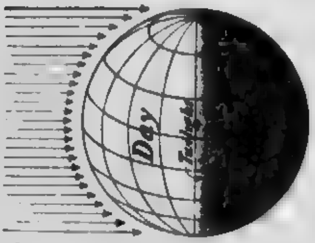
Meridians. When the sun is over an imaginary north-south line passing through our home, we say it is *noon.* This line, if extended, would pass through the north and south poles, and is known as the *meridian* or mid-day line.

Every place to the east or west of us is on a different meridian and has its noon at a different time from ours, because the sun cannot be over more than one meridian at a time. The sun passes a meridian to the east of us before it is over our meridian, and hence places to the east have their noon earlier than we have ours, and places to the west have theirs later.

Longitude and Time. One meridian—that passing through Greenwich, England —is known as the *first,* or *prime meridian,* and time all over the world is compared with Greenwich time. We describe the position of places to the west of Greenwich as being in *West Longitude,* and to the east of it as being in *East Longitude.*

A compass.

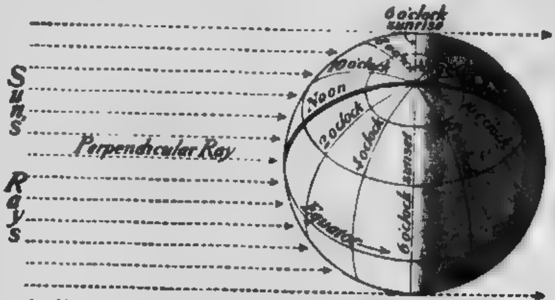
As it takes the earth twenty-four hours to make a complete rotation, the sun seems each hour to pass over fifteen degrees of the complete 360 degrees of the earth's circumference. Therefore, points which are fifteen degrees



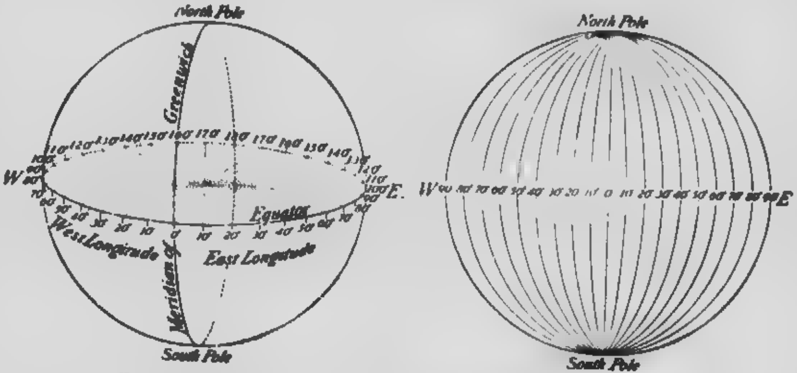
Day, night, and twilight on the earth's surface.

apart vary in time by one hour. Shipmasters carry clocks or chronometers which tell Greenwich time, and, when it is noon where they are, which they can tell by observing the sun, they find out by their chronometers what time it is at Greenwich, and thus learn how far east or west of the meridian of Greenwich they are.

For example, suppose it is noon at Greenwich, it is then midnight one half way around the world from Greenwich — that is, on the 180th meridian. At the same moment, at all points west of Greenwich to the 180th meridian, it is some hour between midnight and noon (that is, forenoon of the same day), while in the opposite direction it is some hour between noon and midnight (that is, afternoon of the same day). When it is noon at Greenwich, a new day is beginning at the 180th meridian. As the noon hour moves west from Greenwich, the new day moves west from the 180th meridian until, in twenty-four hours, midnight again occurs at the 180th meridian and a new day begins. Thus, when it is noon at Ottawa, it is almost three minutes past five in the evening at Greenwich, and almost three minutes past five in the morning of the next day on the 180th meridian.



A diagram showing the time on different meridians when it is noon at Greenwich.



Degrees of longitude and meridians by means of which places are located as east or west of the meridian of Greenwich.

Standard Time. For the convenience of Railway traffic, Canada and the United States are divided into five regions, each region consisting of a belt about fifteen degrees wide, running north and south. All places in the same belt have the same time, which is that of the meridian running through the centre of that belt. Such time is called *Standard Time*, and in each belt it is an exact number of hours slower than the time at Greenwich. The time in one belt differs from that in the next by one hour. Thus, in going from Halifax to Vancouver a traveller, in order to keep correct Standard Time, would need to move the hands of his watch back one hour at four different points; first at Campbellton in New Brunswick or Vanceboro in Maine; second, at Fort William; third at Broadview, and fourth at Laggan. The following are the different regions:

Atlantic or 60th Meridian time, 4 hours slower than Greenwich.

Eastern or 75th Meridian time, 5 hours slower than Greenwich.

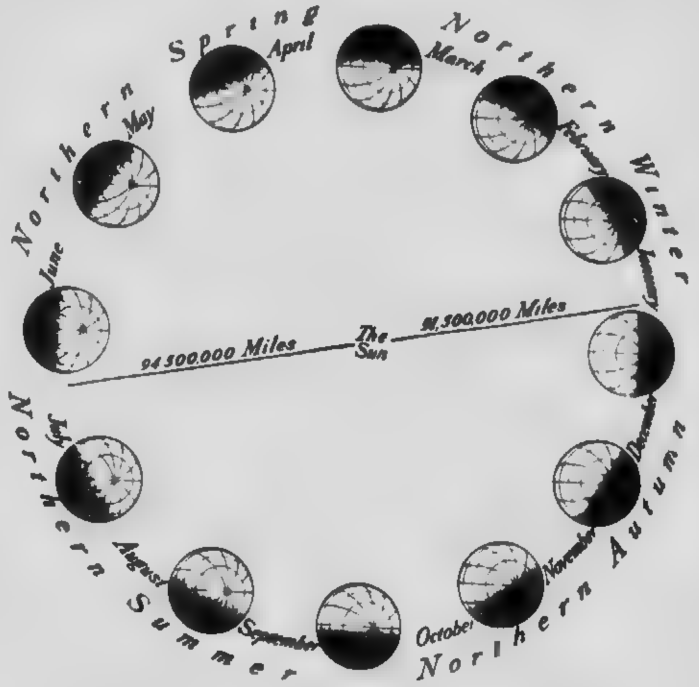
Central or 90th Meridian time, 6 hours slower than Greenwich.

Mountain or 105th Meridian time, 7 hours slower than Greenwich.

Pacific or 120th Meridian time, 8 hours slower than Greenwich.

International Date Line. We have seen that there is a difference in the date between Greenwich and the 180th meridian; for, when it is Thursday afternoon at Greenwich, it is Friday forenoon at the 180th meridian. The 180th meridian passes through the

Pacific Ocean, where there is little land, so that few people except sailors are troubled by this change in date. There are a few groups of islands, however, like the Aleutian Islands, which are on both sides of the 180th meridian. As it would be inconvenient for some of these islands to use a different date from the others, it has been agreed that the day shall not change everywhere at the 180th meridian, but along an irregular line shown on the map and known as the *International Date Line*. This line has been drawn so that no two neighbouring regions belonging to the same country shall have different dates at the same time. See page 51.



Position of the earth in its orbit each month. Notice that the axis always points in the same direction.

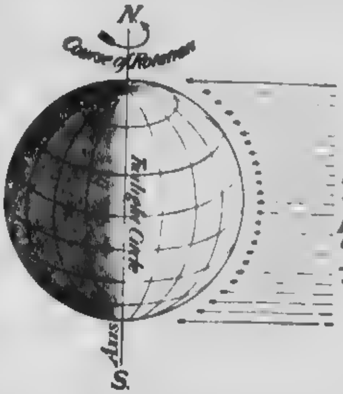
If you were on a steamer going from Vancouver to Japan, it would be necessary, when the steamer crossed this line, for you to change your reckoning exactly one day; for instance, if you reached the line on Monday noon, after crossing the line, you would have to call it Tuesday noon. If you were going in the opposite direction, you would have to call it Sunday noon.

IV. *THE MOTIONS OF THE EARTH*

(Continued)

Revolution. The other great motion of the earth, that about the sun in the course of a year, is known as its *revolution*. The earth, rotating all the time, circles around the sun much as a spinning top sometimes moves about on the floor. The earth does not spin, as the top usually does, with its axis straight up and down, but with it inclined to the plane in which it moves at the angle shown in the accompanying figure. This angle of inclination from the perpendicular is 23½ degrees, or a little more than one fourth of a right angle. As the earth moves about the sun in a nearly circular path, the north pole leans toward the sun. When the earth has reached the opposite position in its course, the north pole leans away from the sun. Accordingly each pole is for six months in the sunlight, and then for the next six months in the shadow of the earth. In order to make this motion clear, thrust a knitting-needle or a long hat pin through an apple from bloom end to stem end. Then tilt the needle to the proper angle, and move it and the apple about some central object representing the sun. It will then be readily seen that, though the needle always points in the same direction as does the earth's axis, one end leans toward the central object when in one position, and away from it when in the opposite position, just as a pole of the earth does.

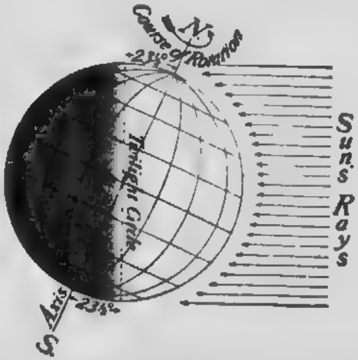
The distribution of sunlight over the earth therefore changes constantly, and as a result we have different seasons. The best method of illustrating the way the earth is lighted by the sun, is by means of a globe and a light in a darkened room. In whatever position the globe is held, it will always be half in the light and half in the dark. The boundary between the dark and the light side will be a circle dividing the globe into halves. This circle of the earth is called the *twilight circle*, because it marks the boundary between day and night. The twilight circle always cuts the equator in halves; hence, day and night at the equator are always equal, each twelve hours in length.



The sun's rays reaching both poles at the equinoxes.

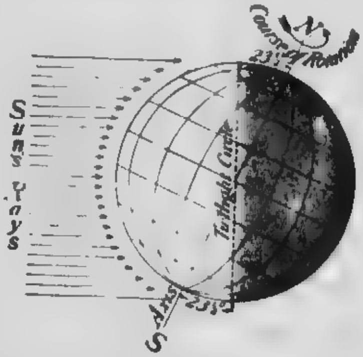
The Equinoxes. When the sun is directly overhead, or *in the zenith*, at the equator, the twilight circle passes through the poles; the days and nights are equal in length throughout the world; and all the earth is lighted in each twenty-four hours. This occurs on the twenty-first of March and the twenty-second of September; and, hence, these two dates are known as the *equinoxes*, or the times of equal days and nights.

Summer and Winter. As the earth moves along in its course from the twenty-first of March, the north pole leans more and more toward the sun, until it reaches its extreme position on the twenty-second of June. Then the sun shines 23½ degrees beyond the north pole. At this time its rays fail to reach the south pole by 23½ degrees. Thus, there is at this season a circular area about the north pole which is continually in sunlight, and one about the south pole which is continually in darkness. Six months later, that is, on the twenty-second of December, the conditions are reversed; the south pole leans toward the sun and the north pole away from it.



The sun's rays reaching 23½ degrees beyond the north pole at the summer solstice.

Between the twenty-first of March and the twenty-second of September the larger part of the lighted half of the earth is in the Northern Hemisphere, and the days in that hemisphere are everywhere longer than the nights. In the six months from the twenty-second of September to the twenty-first of March, the days in the Southern Hemisphere are similarly longer than the nights. Thus, the Northern Hemisphere has summer while the Southern Hemisphere has winter, and winter while the Southern Hemisphere has summer.

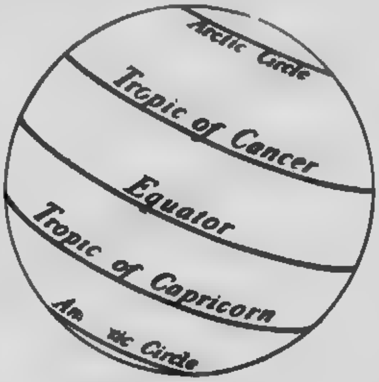


The sun's rays reaching 23½ degrees beyond the south pole at the winter solstice.

Circles and Tropics. The boundary lines of the polar areas are, therefore, circles 23½ degrees from either pole and marking the extreme limit of the sun's rays on the twenty-second of December in the Northern Hemisphere, and on the twenty-second of June in the Southern Hemisphere. These two circles are important lines and are known as the *Arctic* and *Antarctic Circles*. The northern and southern limits of the vertical sun are known as the *Tropics*, from a word meaning "to turn," because the vertical rays first advance to these lines and then recede. The tropic in the Northern Hemisphere is known as the *Tropic of Cancer*, and that in the Southern Hemisphere as the *Tropic of Capricorn*.

Zones of Sunlight. Between the Tropic of Cancer and the Tropic of Capricorn lies the *Tropical Zone of Sunlight*. The sun is vertical at every place in this zone, except at the tropics themselves, twice a year — once as the vertical rays move north and once as they move south.

Between the polar circles and the tropics are two areas, known as the *Temperate Zones of Sunlight*. In these regions the sun shines every day, but it is never directly overhead. At the poles, there are six months of darkness and six months of daylight. At the equator, as we have seen, there are always twelve hours of daylight and twelve hours of darkness. Everywhere else, the days and nights are unequal in length except at the equinoxes.



The earth, showing the principal circles.

Latitude. We have already seen how the rotation of the earth enables us to make use of the sun in calculating time and in finding our longitude. A knowledge of how the earth rotates and revolves also enables us to tell how far north or south of the equator we are. Our position with reference to the equator is known as our *Latitude*. Thus, by knowing our position with reference to the north-south Greenwich meridian and the east-west equator, we can find our exact position on the earth.

The latitude of a place is most easily found by locating the position of the pole-stars in the sky. A person standing at the equator would see the North-star on the northern horizon and the Southern Cross nearly on the southern horizon. If a person could reach the north pole, the north-star would be in the zenith. Everywhere between, there would be a different angle between the plane of the horizon and the line from his eye to the north-star.

At the equator, where the north-star appears on the horizon, the latitude is zero degrees. The distance between either of the poles and the equator is one fourth of the circumference of the globe; that is, one fourth of 360 degrees, or 90 degrees. At the poles, therefore, the latitude is 90 degrees, and at all places between the pole and the equator it is somewhere between zero degrees and 90 degrees.

Everywhere in the Northern Hemisphere the latitude may be found by measuring the angle between the Pole-star and the horizon; that is, the altitude of the Polar Star. The average length of a degree of latitude is 69.09 miles.

Parallels of Latitude. All points at the same distance from the equator have the same latitude, and may be imagined to be joined together by a line, just as the places which are at the greatest distance from the poles are imagined to be joined by a line known as the equator. All of these lines would be parallel to the equator and are, therefore, called *parallels*. The parallels that are the most used on maps are those which are ten degrees apart. All places between the equator and the north pole are in North Latitude (N. Lat.) and places between the equator and the south pole are in South Latitude (S. Lat.)

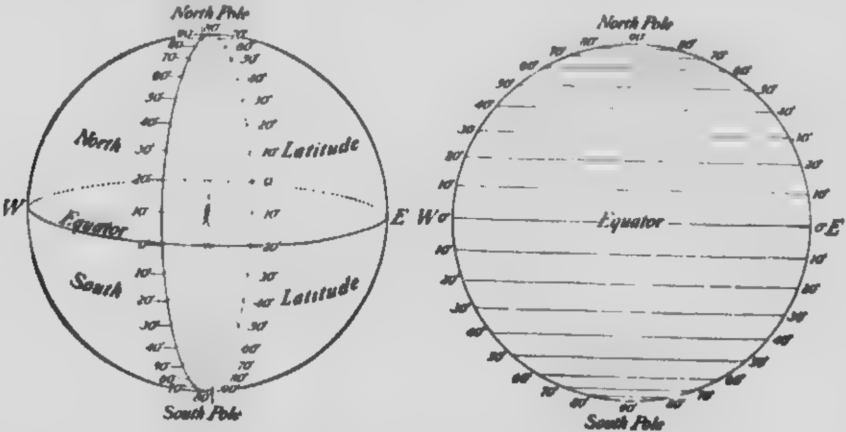
Maps and Map Scales. Latitude and longitude are of great importance to all people who use maps, because all maps are drawn to show the position of places in the world by their latitudes and longitudes. A map, accordingly, is a plan showing the position of objects on a part or the whole of the earth's surface.

Maps drawn to show in a detailed way the features of a small section, like city or town maps, or the plan of a farm, are very much easier to draw and to read than are some of the maps in this book, where the whole world has to be represented on less than one page. Such detailed maps are said to be drawn on a large scale, while maps like those of the world which are used in this book are drawn on a small scale. Scale is usually expressed by a line drawn to show how many miles on the earth a given length represents.

On all maps of larger areas the meridians of longitude and the parallels of latitude are shown as continuous black lines. These lines are numbered to show the position of the area they inclose in relation to the Greenwich meridian and the equator.

In comparing areas on different maps the scale on which the maps are drawn must always be taken into account. Continents should be compared on a world map; the countries of a continent on a large-scale map of that continent; and the states or provinces of a country on a large-scale map showing the entire area of that country. It is only by knowing the scale on which any two maps are drawn that we can accurately compare all or parts of their areas.

Map Projections. In large-scale maps the meridians run up and down the map, and the parallels across the map. Owing, however, to the fact that the earth's surface is curved and the map sheet flat, it is very hard to show large areas in their true proportions on a map. This can readily be seen by any one who tries to flatten out a large piece of orange peeling without breaking it. Therefore, world and continent maps are drawn according to some definite plan which will tell the truth as closely as possible. These plans are called *projections*. For our purpose it is only necessary to remember that the meridians show the north-south lines, and the parallels the east-west lines. By the study of these lines we can tell the direction of one point from another, and by studying the scale we can estimate distances between them.

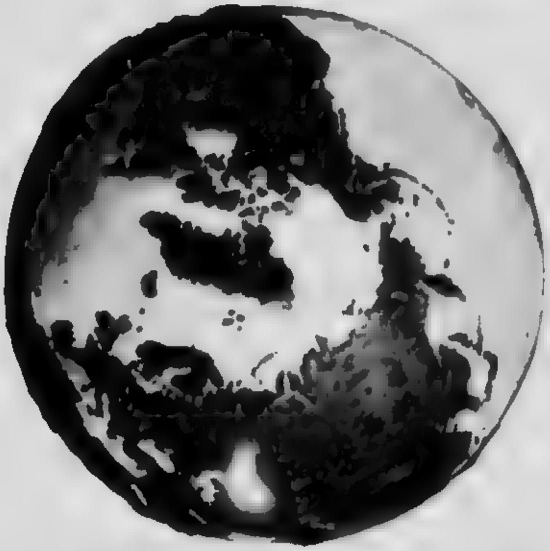


Degrees and parallels of latitude by means of which places are located with reference to the equator

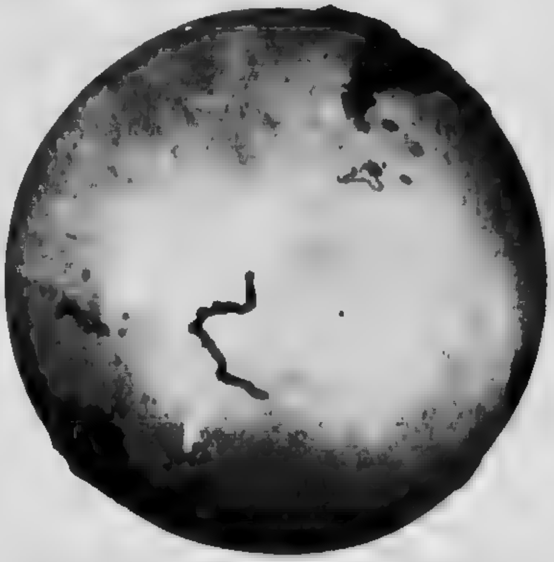
V. THE CONTINENTS AND OCEANS

Distribution of Land and Water. As we look at the globe, which is our best representation of the larger features of the earth, we see that its surface is made up of land and water. About seven tenths of the surface is water and the remaining three tenths land. Deep under the water, however, there is rock forming a part of the solid earth. It is in the greater depressions of the rock mass that we have oceans.

Before the interior of the earth cooled sufficiently to cause the crust to fold itself into troughs and ridges, it may be supposed that the waters of the ocean, obeying the law of



The Northern Hemisphere, which contains the greater part of the land of the world.



The Southern Hemisphere, which is largely composed of water.

gravity, would distribute themselves uniformly over the earth's surface and that there would be a universal ocean. This condition of affairs may have lasted for many ages. Gradually, however, as the cooling and contracting process went on, the crust fell into wrinkles in order to adapt itself to the reduced size of the interior, just as the skin of an apple wrinkles when the fleshy part shrinks. As the contraction continued, the waters sank deeper and deeper into the troughs, and so the highlands of the continents appeared above the ocean. The first portion of North America to be so elevated was the Laurentian plateau around Hudson Bay. As the continents rose, the water was confined to narrower but deeper depressions, and thus the oceans were probably formed.

The larger part of the land area of the earth is in the Northern Hemisphere. It is possible to hold the globe so that the visible half contains nearly all the land and the other half nearly all the water. Thus we may divide the world into the *Land Hemisphere* and the *Water Hemisphere.* The centre of the land half may be called the *Land Pole.* It is near London, England, and the *Water Pole* is exactly opposite, near New Zealand. Thus, England is near the centre of a great inhabited land area of the world, and New Zealand lies near the centre of the vast uninhabited water region.

Continents and Islands. The land of the earth is mostly in a few great masses known as *continents,* though some of it is scattered in smaller masses known as *islands.* In many places the land of the continents extends off shore for several miles to an edge where the depth of the ocean increases suddenly. These great shallow areas are known as *continental shelves,* because they are really parts of the adjoining continents. Islands rising above a continental shelf like the Island of Great Britain, are known as *continental islands,* to contrast them with *oceanic islands,* one kind of which rises above the water far from any land, and the other lies nearer to the coast but is separated from it by very deep water. The Pacific Ocean is thickly set with small oceanic islands. St. Helena is a good instance of an oceanic island not far from a great continent.

Continental shelves have probably been formed by the surface waters of the ocean which are affected most by the winds. These eat inward along the top of the shore ridge until a depth of about one hundred fathoms is reached The continental shelf has an average width of from one hundred to two hundred miles and is widest on the margin of the oldest continents exposed to the heaviest waves. Hard masses which resist the attack of the waves remain on the shelf as islands, or as shoals along the top of the shelf. The sediment brought down from the land by streams and rivers is spread out; the coarser deposits settle next the shore and may form islands, while the finer mud is carried farther out. In the shelf deposits, are embedded the remains of plants and animals. These become the fossils of the stratified rocks into which the old continental shelves have been converted.

Surfaces of the Continents. An area of land is called a continent, not, however, merely because of its size, but also because of the arrangement of its surface features. All the greater land masses are made up of highlands and lowlands, and the highest highland in each case is usually nearest to the greatest ocean. The land, therefore, slopes gradually downward from the highest highland toward the smaller oceans. In many cases there is a smaller highland which interrupts the lowland, as in North America, where we have the great Rocky Mountain Highland on the west, and the smaller Appalachian Highland rising slightly above the great lowland of the eastern part of the continent.

According to this description we have five continents — North America, South America, Eurasia (Europe and Asia), Africa, and Australia. Eurasia is, for convenience, usually called two continents, but it is really one great land area. A few years ago, Australia was called an island by some geographers and a continent by others. As it fits the description given above, however, it is now called a continent by everybody.

The Ocean. Surrounding the land masses of the earth is the great body of salt water, the *Ocean*, of which we have already spoken. While the surface of this water area is continuous, and vessels can go from one seaport to another, the continents so divide the mass into more or less separate basins, that, for convenience, these basins are considered as different oceans. The great oceans are the Pacific, the Atlantic, the Indian, the Arctic, and the Antarctic. Certain arms of these oceans are so surrounded by land that they are known as *Seas*, as, for example, the Red Sea or the Mediterranean Sea.

Composition, Temperature, and Bed of the Ocean. The Ocean is over 96 per cent. pure water. The rest is made up of salts of various kinds dissolved in the water, of which common salt is by far the most abundant.

Until about fifty years ago, little was known of the bottom of the ocean. It was thought to be a great smooth basin without life of any kind

The Land Hemisphere.

The Water Hemisphere.

below a hundred feet. The bottom is now known to consist of plains and plateaus with here and there volcanic peaks rising to the surface and forming islands. In the middle of the Atlantic, extending north and south and reaching the surface in places, is a great plateau known as the Mid-Atlantic ridge which broadens out between Newfoundland and Ireland into what is known as the "telegraph plateau"; for, on it are the transatlantic cables. The other oceans have similar elevations. The average depth of the ocean is much greater than the average elevation of the land.

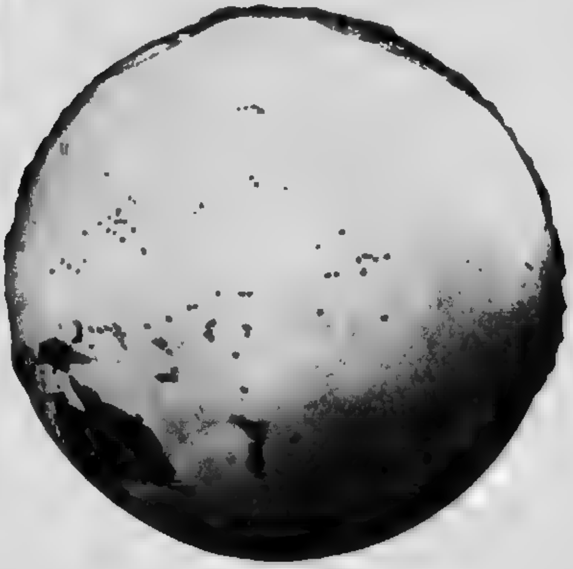
The Atlantic Ocean.

The temperature of the ocean decreases from the equator, where there is an average temperature of from 80° to 90° F., toward the poles until the freezing point is reached. Generally speaking the temperature also decreases with the depth until a temperature between 32° and 35° is reached.

Besides the sediment which is derived from the land and which is deposited mainly on the continental shelf, the floor of the ocean is covered with a slimy material made up of the shells of minute animals which live on its surface. When these animals die, their tiny but dense skeletons slowly settle down to the bottom of the ocean and form a deposit known as *Globigerina Ooze*. The Chalk Cliffs of England were built up in this way.

In the deepest parts of the ocean, the ooze changes its character and becomes what is known as red clay. The lime of the shells has become dissolved out, and the insoluble parts left are mixed with volcanic dust which contains iron, hence the red colour.

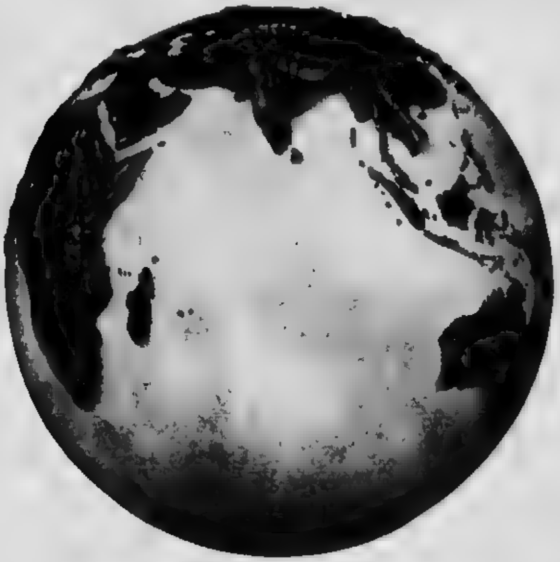
Life in the Ocean. Animal life has been found in every part of the ocean that has been explored. It is especially abundant at the surface and on the bottom. The shore life varies with the kind of coast. On rocky coasts are found those forms which attach themselves to sea-weeds or rocks, or which crawl about, while on sandy or clayey shores burrowing or crawling types are found. The shallow waters form the great fishing grounds of the world. Besides the larger animals that live in the surface waters of the ocean, there are myriads of smaller forms, many of which, however, are too small to be seen without a microscope. To these is due the phosphorescence of the sea; they form the main food supply of the larger sea animals, and their skeletons form the Globigerina Ooze. But the most curious fact in connection with ocean life is that animals belonging to many different families are found in the very deepest parts. Here the pressure of the water is very great, over two tons to the square inch, and the bodies of these deep-sea forms, when brought to the surface, often explode owing to the sudden change of pressure. Most of these are blind, but some have very large eyes and probably get light from certain luminous organs with which they are provided.


The Pacific Ocean.

Ocean Eddies. The water of the oceans and seas is commonly in motion in a series of *currents*, due in part to the effect of the wind blowing constantly over their surface. The currents of the oceans, however, differ in their direction and character from those in the seas. The currents in the seas depend on the amount of water received from inflowing rivers as compared with the amount lost by evaporation. The Mediterranean Sea, for instance, loses more water by evaporation than it receives. Hence a current flows into it from the Atlantic through the Straits of Gibraltar. The conditions are reversed in the Baltic Sea.

In the ocean the surface water is continually in motion in a great circling eddy, which follows a very definite path. In both the Northern and Southern Hemispheres, the currents move from east to west in low latitudes and from west to east in higher latitudes. Thus the eddy moves in the direction of the hands of a watch in the Northern Hemisphere, and in the opposite direction in the Southern Hemisphere.

In order to be accurate, therefore, we must divide the Atlantic, the Pacific and the Indian Oceans each into two ocean basins, one in the Northern and the other in the Southern Hemisphere, because each has a separate eddy in each hemisphere. The Antarctic Ocean moves regularly in a great eddy about the south pole, and so is an ocean; but the Arctic Ocean, so called, is really not an ocean, as it does not meet the condition. It is merely a sea which has been called an ocean for so long that we must continue to use the name, though we know it is not correct.



The Indian Ocean.

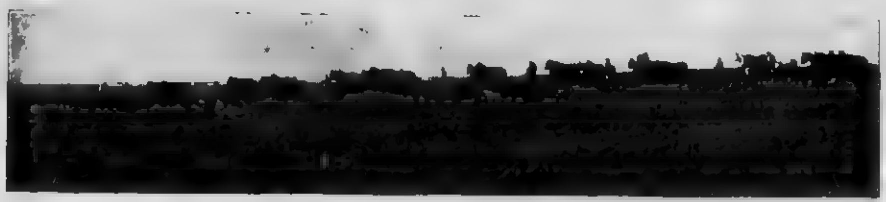
VI. *RIVERS AND RIVER VALLEYS*

The Landscape. The landscape which we see about us is made up of slopes, over which we travel, and down which the water runs after a rain, seeking lower ground. These slopes are parts of river valleys. In some places we find the slopes are steep and long. We then describe the country as being hilly or mountainous. In others the slopes are very gentle, and we say the land is flat and like a plain.

No two regions are ever exactly alike. In the variety of landscape lies much of the beauty of different districts. Wherever we go we find slopes and valleys, and in most valleys we may see flowing rivers along which people live and build their towns and cities. Rivers help to change the slopes of valleys. They are of service in turning mill-wheels, in developing electrical energy, in supplying water to the soil and to reservoirs of cities, and as water-ways for commerce. Rivers and river valleys should therefore be studied with care.

Formation of Rivers. Wherever two slopes meet at their lower edges, we shall usually find a stream of water. Such a stream we commonly call a *brook*, a *creek*, or a *rill*, if it is small, and a *river* if it is large. In some cases the water is clear and beautiful, in others it is muddy and brown. The muddy colour is due to particles of *detritus*, which the water is carrying away from the land. If the detritus is large, we call the pieces *boulders;* small stones we call *gravel;* small, sharp, hard fragments are known as *sand*, while fine, soft, light, black, brown, or gray particles which are held in suspension in the water are called *mud* or *clay*.

The clear stream also carries detritus away from the land, even though none may be visible rolling along the bed. Some of the clearest streams in the world contain a great quantity of earth material dissolved in the water. This material is made up of substances which are easily dissolved from the rock. These *salts*, as they are called, are carried out to the ocean and give to it its saltness. Where the slopes are steep, the



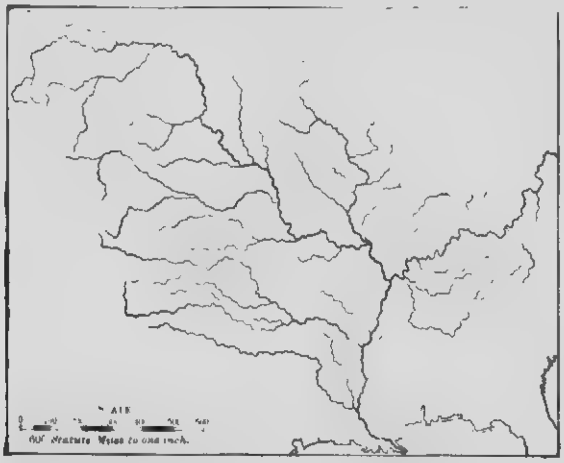
A flat plain, where the slope is very gentle.

pieces of rock carried along are often large and heavy.

What a River Is. Every stream of water carries along detritus as it flows through the land, and the detritus is as much a part of the stream as is the water. Hence, we need to think of a river, not as water merely, but as a *stream of water and detritus, moving through the land.* The water and the detritus are moving downhill toward the lowest part of the earth's surface, which is the ocean.

River Basins and Systems; Divides. All the land whose surface water and detritus are moving toward the ocean down one great river, we call the *basin* of that river. All the streams which combine to make one great *main* or *master* stream we call a *river system.* Each of the smaller streams which *contributes* water and detritus to the main stream is a *tributary.* As there is no region which is without slopes, river basins are found everywhere.

As we climb the slope from a stream toward its head, we finally reach a point from which the land slopes in at least two directions. The irregular line drawn through a succession of such points, thus marking off one basin from another, is known as a *divide.* During a rainstorm it divides the water going down one slope from that going down the neighbouring slope, just as the ridge-pole of a house does.



The Mississippi River system, including large branches, many smaller branches, and a large extent of land surface drained.

A river in Switzerland, showing boulders carried in time of flood.

Work of Rivers; Valleys. As the running water moves through the land, it continually changes the form of the land by removing materials from the surface. Thus a river does work by gathering up rock detritus and carrying it away. A river does this work more rapidly where it flows quickly, less rapidly where it flows slowly. Therefore streams wear the land away most rapidly near their heads. Here they cut sharply into the rocks and form narrow, steep-sided gorges. In course of time these are gradually worn down until finally the valley becomes so deep and broad that its slopes are very gradual.

Young River Valleys; Canyons; Water Gaps. A river which has just begun its work, we call a *young* river It has worn away but

Divides in a mountainous country. The highest ridges form the main divide; the lower slopes, the lesser divides

little of the land through which it runs. A *young valley*, therefore, is a valley that has been but little worn, and is narrow in proportion to its depth. Such young valleys are usually found near the head-waters of rivers, but may be found wherever a rock wears away very slowly. A young valley with steep sides is often called a *gorge*, *glen*, *ravine*, or *chasm*, and if very deep a *canyon*. Young valleys are to be seen everywhere in the Rocky Mountains. However, the greatest young valley in the world is the Grand Canyon of the Colorado in Arizona. In places it is more than a mile deep and at the widest part about thirteen miles across.

Sometimes a broad valley contracts for a short distance to a narrow gorge, because of a barrier of rock or a mountain ridge. This stretch of narrow valley becomes important because all railways, highways, and canals in the valley must pass this one point. At such points there is often a town. Why?

In the Rocky Mountains, a river frequently cuts its way right through a range where there is no evidence of a break or fault in the rock formation. These gaps are believed to be due to rivers which existed before the mountains began to rise and which succeeded in wearing their way as fast as the mountains rose. The Bow River flows through such a gap near Banff.

Waterfalls and Lakes. When a river is young, its course in the mountains and hills is often irregular. In places it bounds along in *rapids*, or it may leap over cliffs or down very steep slopes, forming a *waterfall*. A great waterfall like that of Niagara is often known as a *cataract*. A fall made by a small stream leaping a great distance is commonly called a *cascade*. Many of the cascades in the Rocky Mountains are famed for their beauty.

In some places the water finds a barrier in its course behind which it must accumulate before it can flow over the edge. Thus is formed a quiet stretch of water known as a *lake* or *pond*. Water may flow into the lake by several streams known as *inlets*, but, as a rule, it flows out at only one place, the *outlet*. In some regions lakes also occur in basins in the ground and have no outlet. If such a basin should fill up, the water would flow over the lowest point in the bounding rim and a stream would be formed.

A general view of the Grand Canyon of the Colorado

Uses of Lakes and Waterfalls. Lakes and waterfalls are often helpful to us. The force of the falling water is frequently used to turn wheels, to give power to mills, and to operate dynamos and other machines. A portion of the power of Niagara is now used to develop electricity for power and lighting in the city of Toronto, eighty miles away.

Ausable Chasm, near Keeseville, New York. A young valley in which the stream is cutting rapidly.

Large lakes or long, narrow lakes are much used for travel and commerce, because water transportation is usually cheaper than land transportation.

The greater part of the travelling and exploration in very early days was by way of lakes and rivers. The Great Lakes, and Lake Champlain especially, were thus used by the early missionaries and explorers.

Lakes are useful in another way. They act as filters for the streams that flow into and out of them. The detritus brought into the lakes settles to the bottom, and the water flows from the lakes clear and beautiful. This is well illustrated by the St. Lawrence River, which is very clear where it flows out of Lake Ontario. The fine detritus deposited on the bottom of a lake and the accumulated vegetation gradually fill it up until, in the course of time, it is changed into a marshy spot covered with trees and plants and known as a *swamp*, or even into firm land suitable for farming. There are many such places in our North-West which were formerly small lakes and are now overgrown with spruce and tamarack and known as *muskegs*. Lake Erie is said to be fast filling up with detritus brought down by the many streams flowing into it.

Whenever a lake has dried up or has been drained, as sometimes happens, the bottom or floor forms a flat plain and usually makes fertile farming land. The great wheat fields and flax fields of Minnesota, North Dakota, and Manitoba are in the basin of a great lake, which is known as Lake Agassiz, but which has long since disappeared.

VII. RIVERS AND RIVER VALLEYS

(Continued)

Mature River Valleys. As young valleys grow old, and are worn into more and more gentle slopes, they become valuable for occupation if situated where people can live. A broad, middle-aged, or *mature* valley, like the St. Lawrence Valley, is often devoted to farming, and has railways and highways. Mature valleys are often thickly populated, because many people can secure a living on their pleasant slopes and rolling surfaces.

A mature valley generally has but few lakes, because the stream by this time has succeeded in wearing down the barriers in its course, so that it can flow freely. There may be occasional waterfalls, however, where some unusually strong barrier exists.

A lake gradually filling up with detritus and decaying vegetation.

Deposits in Mature Valleys; Alluvial and Flood Plains. The slopes in a mature valley are more gentle than those in a young valley, and along the main stream they often take the form of a flat plain. Such plains are known as *alluvial plains*. They have been built up out of the detritus that the stream, owing to its lack of force, could carry no farther. If alluvial plains are flooded at times of high water, as often occurs, they are called *flood plains*. These plains, because of their fine soil, level surface, and nearness to water, are frequently excellent farming regions. If narrow and bordered by steep slopes, they furnish perhaps the only route that carriage roads and railways can follow. Examples of alluvial plains are those of the Lower Nile, the lower Ganges-Brahmaputra, the lower Mississippi, and the lower Fraser.

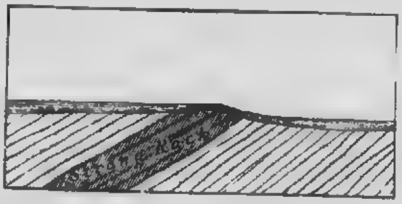


Diagram of rapids where the water of a lake flows out over strong rock

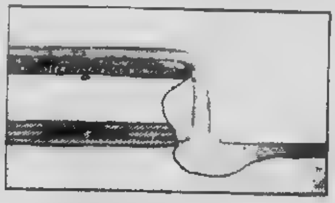


Diagram of a waterfall.

Alluvial Fans. When a tributary stream flows from the steep side of a valley on to the gently sloping floor of the main valley, its force is suddenly weakened, and it deposits a large amount of the detritus it is carrying. This detritus is usually built up in the form of a fan, and such formations are therefore frequently called *alluvial fans*. Oftentimes the tributary divides and flows down over the face of the fan in several channels, called *distributaries*, because they distribute the water and detritus in many directions.

Alluvial fans are particularly abundant in the dry regions of the world where the rivers have little volume and force. They may often be seen after a rain beside a gutter stream which has received side streams carrying such detritus.

Old Valleys. As the rivers go on wearing away the land, they gradually reduce the slopes until the region becomes very flat, with just enough incline to make the rivers run. Then a river and valley may well be called *old*, for most of the land to be worn away has already been removed. Alluvial plains abound in the lower portions of old rivers, because the current of an old river is not great enough to carry away the large amount of detritus brought down by its tributaries.

Meanders. A very old river usually has a large alluvial plain, a part of which may be called a flood plain. As the slope of the river is gentle, and the water consequently flows slowly, it can carry only the finest detritus. Hence, the particles forming an alluvial or flood plain in an old valley are extremely fine, and the soil is excellent. When a river flows thus slowly and quietly, it cannot follow a straight course, as most

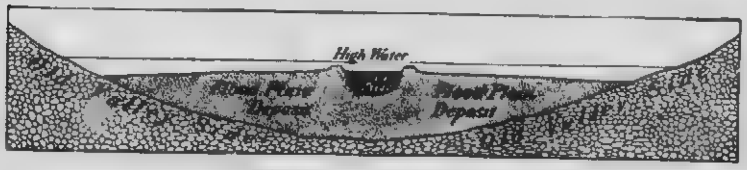
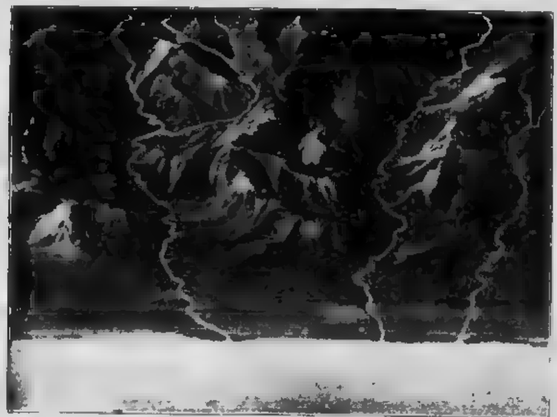


Diagram of a flood plain.

A farm scene in a mature valley.

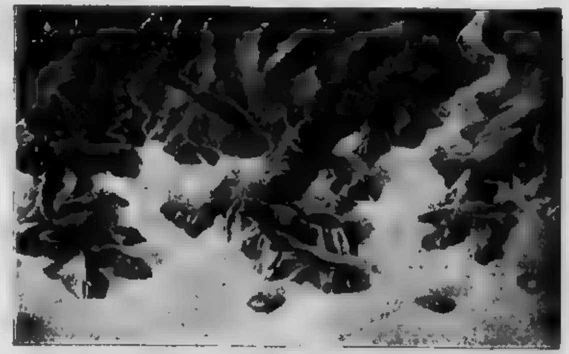
young rivers do, but is turned from its path by the slightest obstacles; hence it follows a winding, snake-like, or meandering course. The curves are called *meanders*, because they are like those of the Menderez (ancient Meander) River, which flows from Asia Minor into the Grecian Archipelago.

In a meandering stream the water is deeper and swifter on the outside of the curves than it is on the inside. The river often cuts into its shore on the outside, forming a steep bank, while the inside shore slopes gently. Sometimes the meanders become so close together that finally the land separating them is cut through, thereby straightening the river. The meanders are then left as lakes in the shape of horse-shoes, with the open side of the horse-shoe facing the river. Such lakes are made by the river as it develops, and are very numerous in large, old rivers like the Mississippi. They are sometimes known as *oxbow* lakes, and the new stretch of river cutting across the neck of a meander is commonly called a *cut-off*.



Mature river valley, bordering a low coastal plain.

Population in Old Valleys. In countries where the climate is favourable, fine farms are usually found in old river valleys, which often support a dense population. The most densely inhabited regions in the world are the old river valleys of south-eastern Asia. These regions, like the old valley of the Nile in Africa, and that of the Ganges-Brahmaputra in India, are famous, because they have supported dense populations for a long period of time.

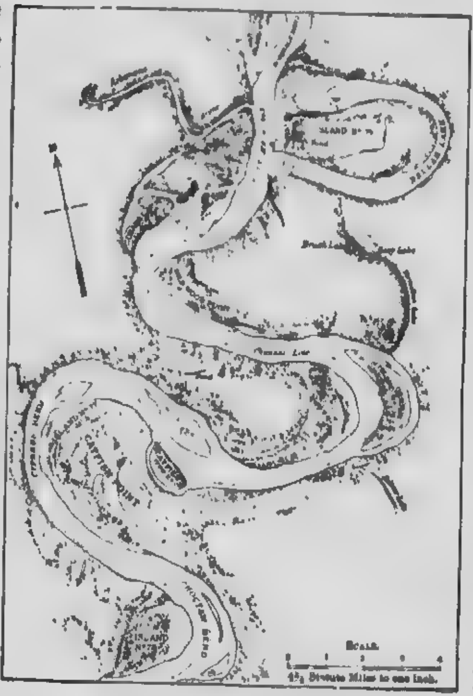


The mature river valley and low coastal plain, after being drowned.

Deltas. Where a river flows into the ocean, or any body of standing water such as a lake, or even into a quiet stretch of a larger river, most of the detritus is dropped near the mouth of the stream, thus building the land gradually into the water and forming a *delta*, so named because of its resemblance to the Greek letter (Δ) of the same name.

The main stream frequently divides at the head of the delta and flows across it in several distributaries, as in the case of alluvial fans. The deltas of the Nile, the Ganges-Brahmaputra, and the Mississippi are very large, and have many distributaries.

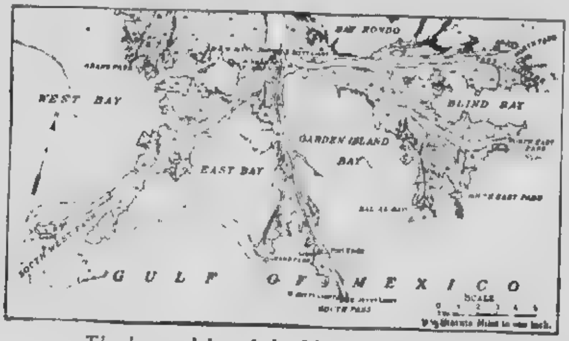
Drowned Valleys. The land is slowly rising or settling in many parts of the world, and rivers flowing across such regions are changed in many ways. We can easily see the effects of settling, because as the land slowly sinks, the ocean water gradually fills up the river basins, so that the portion of the valleys which were formerly above water are submerged and no longer visible. We say that such valleys have been *drowned*.



A map of the alluvial plain of the Mississippi.

If an old or mature valley is drowned, we have a broad arm of the sea, irregular in outline, into which may flow separate streams, formerly tributaries of the drowned main streams. Such drowned valleys are known as *estuaries* and are very helpful in commerce, because they usually form good harbours. The lower St. Lawrence, and the Chaleur Bay are good illustrations of drowned valleys.

If the river valley is narrow and young when it is drowned and is subsequently rounded out by the action of ice into a V shape, we have a steep-walled narrow valley known as a *fiord*. Fiords are often very beautiful, because of the rugged scenery about them; but they are not important in commerce, because few people can live along the sides of such drowned valleys. The fiord of the Saguenay River in Quebec is one of the most beautiful in America, though there are many well-known and magnificent ones along the coast of British Columbia and Alaska. The coasts of Norway, of southern New Zealand, and southern Chile are also indented by magnificent fiords.



The lower delta of the Mississippi River.

Hills and Valleys. As the rivers wear down the land about them, forming valleys, the harder rocks, which are worn away more slowly, are left rising above the gentle slopes, often in isolated elevations known as *hills*. A hill, therefore, is a small part of the land that has not yet been worn down as low as the rest of the region; or it consists of material piled up by ice, as in the case of most of the hills of southern Ontario. We shall see later that, as the land wears away, very high elevations, or *mountains*, are sometimes left between river valleys.

VIII. PLAINS, PLATEAUS, AND MOUNTAINS

What Plains and Plateaus Are. A great part of the surface of the world is composed of *plains* or *plateaus*, on which a very large proportion of the people of the world live. On a plain there are generally few elevations rising above the prevailing level of the country, and the slopes are gentle. A plain may be hundreds of miles in extent or it may contain only a few acres. In every case it either slopes gradually down to lower land or water, or it is bordered by the somewhat steeper slopes of hills or mountains, as are some of the Alberta and Saskatchewan plains.

A plateau is characterized by slopes similar to those of a plain, but it has often a greater number of elevations rising above the general surface of the country. A plateau usually drops abruptly on one or more sides to lower land, as is the case with the plateaus of British Columbia.

Owing to the great altitude of a high plateau, the rivers have a chance to cut deep valleys before they reach low levels. These river valleys often have nearly vertical sides, and by examining them we learn that the layers of rock in a plain and plateau are usually almost horizontal. The Archaean plateaus of Canada are, however, formed of greatly disturbed strata, seldom horizontal. The deepest and most wonderful river valley in the world is the Colorado Canyon, which has been cut into the Colorado Plateau of Arizona.

Low plains in regions where the climate is favourable, are very productive and are densely inhabited. But many plateaus, such as Tibet, are so high that their climate will not permit of farming. These are often occupied, however, by people who are engaged in grazing. On both plains and plateaus the slopes are so gentle that roads and railways can be built with equal ease in almost any direction. For this reason people rapidly occupy the plains, where they can spread out and have plenty of room, as was illustrated in the occupation of western Ontario.

A Norwegian fiord formed by the drowning of a young valley.

Mountains. Every continent contains a certain area that rises into a great highland known as a *mountain system.* A mountain system is usually made up of several nearly parallel series of heights known as *mountain ranges,* each of which usually has many points, or *peaks,* rising somewhat sharply above the rest of the ridge.

Any height rising sharply to a considerable altitude above the surrounding region is

A broad plain.

commonly known as a mountain. The term mountain, however, is more properly applied to any region in which the rocks have been folded and wrinkled or turned on edge, as seen in the British Columbia mountain systems. We know very little about the causes of mountain building, but we know that mountain ranges are continually rising, just as we know that the continents are continually rising or settling. As a mountain range rises, it begins to be worn down, and in this way it furnishes detritus for the rivers to carry away. Thus, the mountain peaks we see are but a part of the mass of rocks formerly existing there.

Plateau of the Colorado Canyon.

Relations of Mountains to Man. Mountains act as barriers, hemming people in; for roads and railways are built with difficulty across them. Tunnels are often constructed to allow railways to pass from one side of the range to the other, as in Switzerland and British Columbia. Hence, low gaps or passes become of great importance. The Bow River Pass enables the Canadian Pacific Railway to cross the Rocky Mountains.

The high peaks are usually avoided, except by those who wish to ascend for the pleasure of mountain climbing or for the view to be gained from them. As the air on mountains is always thinner and purer than that on the lower plains, these highlands are visited by many people in search of health or for pleasure, particularly in the summer time.

The highest peaks in the world have their summits covered with snow. Most of the other mountains are covered with forests, and are the homes of certain wild animals which can climb over the rocks and the steep slopes with ease. Mountains are, therefore, often visited by hunters in search of big game. Some mountains contain valuable minerals, as gold, silver, and copper, and hence mining towns have sprung up in regions that would never have been occupied otherwise. Rossland and Fernie in British Columbia are examples of such mining towns. Farming is generally impossible in mountain regions, except on the plains found in the occasional valleys lying between the mountainous ridges or on the "benches" on the slopes.

IX. UNDERGROUND WATER

Ground Water and Run-Off. Only a certain part of the rain that falls runs down

A mountain range in the Pyrenees, showing peaks rising in the distance.

Mountains formed of folded rock.

immediately toward the sea in rivers. A part of it is evaporated; but most of it soaks into the ground, becoming what we know as *ground water*. The cracks in the rocks are filled with water often to very great depths.

It is this ground water soaking through the soil that feeds the trees and other plants. In all farming regions, therefore, it is important to know how large a part of the rainfall will immediately run off, and how much will soak into the ground. The portion that immediately runs off is known as the *run-off*. Some soils, especially if they are sandy, will take up water much more readily than others. Regions that are covered by forests or grass do not have as great a run-off as those that are barren of vegetation

A mountain pass in Norway.

In regions where the run-off is very great, the water is sometimes held back in large artificial reservoirs and fed out to the land as needed. This watering of the land, either with the water thus stored up or with water pumped from deep wells beneath the ground, is known as *irrigation*. Many regions, like some parts of British Columbia, southern California, and Spain, that would otherwise be deserts, have become fertile through irrigation.

An irrigated field.

Wells and Springs. It is the underground water, soaking through the soil, that accumulates in a hole dug in the ground and forms a *well*. When the ground water finds its way to the surface again, as it often does, we have a *spring*. Most streams and rivers have their origin directly or indirectly in springs.

Caves. Limestone rocks are gradually dissolved by water, so that, in limestone regions, much of the water often runs along beneath the surface, dissolving out an underground channel and forming what we call a *cave*. The cave water finally comes to the surface again at a lower level, and flows on as a stream. Some of these caves are very large and have miles of underground passages. The Mammoth Cave of Kentucky is one of the best and largest examples in the world.

In the course of time a large part of the roof of a cavern may fall in, forming a gorge, leaving perhaps an unfallen portion in the form of a *natural bridge* crossing from one side to the other. The celebrated "Natural Bridge" in Virginia is supposed to have been formed in this way.

A hot spring deposit in Yellowstone Park. The minerals in solution in the heated water gradually build these beautiful deposits.

X. *VULCANISM*

Hot Springs. In some regions of the world, the water which has soaked into the ground comes to the surface again very much heated. This is because the interior of the earth is hot, and the water has penetrated far enough to become heated, even to the boiling point. When this water flows quietly to the surface, like a spring, we call it a *hot spring*. There are many hot springs in the Rocky Mountains at Banff, and in the Yellowstone National Park. Some hot springs bring to the surface water containing dissolved minerals These make the water beneficial for people suffering from certain diseases, and, hence, hot springs frequently become health resorts.

The interior of a cave in New South Wales.

Geysers. In the Yellowstone National Park in Wyoming, in Iceland, and in certain parts of New Zealand, the hot waters spout out of the earth at more or less regular intervals, forming intermittent hot springs known as *geysers*. Some of these throw water as high as two hundred feet. There are so many geysers and hot springs in one part of the Yellowstone National Park that the river carrying away their water is appropriately named Firehole River.

The dissolved minerals brought to the surface through hot springs and geysers often crystallize out again as the waters cool. Thus, deposits of minerals are built up about the mouths of the geysers or springs, forming a considerable elevation above the region round about. Some of these hot waters contain low forms of plant life, which give a most beautiful colouring to the deposits.

Volcanoes. In some parts of the world melted rock, or *lava*, has been pushed up from beneath the surface through breaks in the surface rocks, and has cooled in great cone-shaped heaps, or in broad sheets. In some places this process is still going on Each of these cone-shaped masses is the result of what is known as *volcanic action.* The mass may be no larger than a hill, or it may be two or three miles in height.

The bursting forth of lava from a volcano or a fissure is called an *eruption*

At the top of the peak, there is usually a saucer-like depression known as the *crater.* At the bottom of the crater is the opening, or *throat,* of the volcano, through which issues the mass of steam, hot water, and rock.

When the volcanic eruption is intense, the melted rock is blown out in fine particles, which may be carried vast distances, falling as fine dust known as *volcanic ashes.* Sometimes the rock is only partially melted and is blown forth in large, hot masses known as *bombs,* or as great unmelted blocks of stone.

Old Faithful Geyser in Yellowstone Park

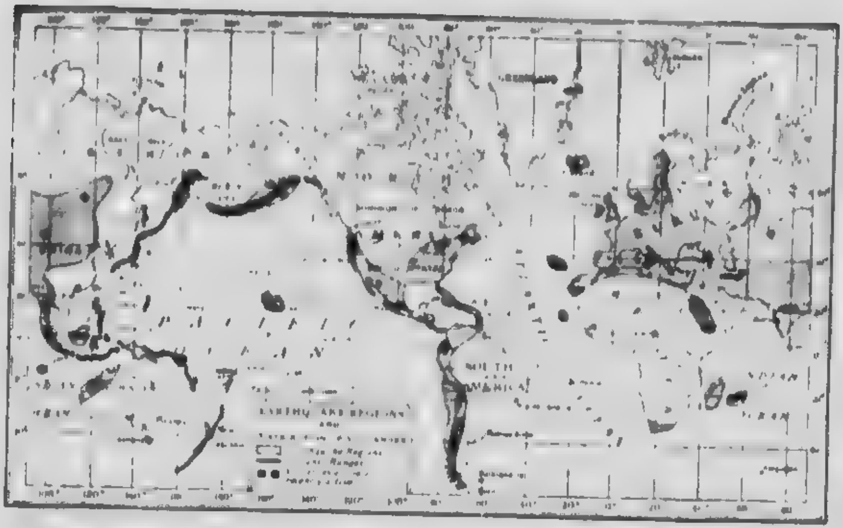
Perhaps the best known and most symmetrical volcano is Vesuvius. During a great eruption, nearly two thousand years ago, its ashes buried two neighbouring cities, Herculaneum and Pompeii, and killed a great number of people. During a severe eruption in 1906, vast quantities of lava flowed down this mountain, and the whole country in the vicinity, including the city of Naples, was deeply covered with ashes.

The last great volcanic eruption was that of Mont Pelée, in the summer of 1902. Mont Pelée is on the island of Martinique, in the Caribbean Sea. This eruption destroyed the town of St. Pierre, not even one of its 30,000 inhabitants surviving.

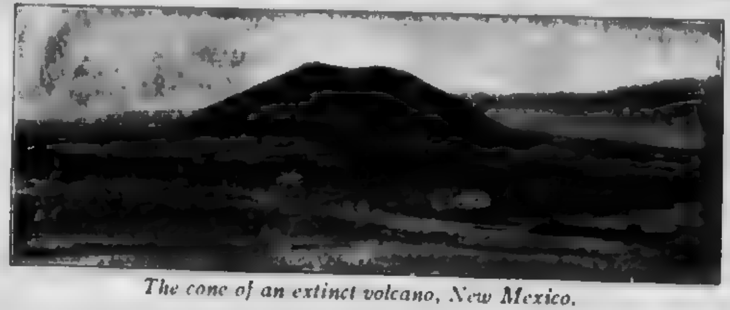
Cause of Volcanoes. It is believed that the heat of the interior of the earth is great enough to keep, under ordinary conditions, the rock material of which it is composed, in a molten state. Increased pressure, however, increases the difficulty in melting; in other words, it raises the melting point. Now the pressure of the earth's crust on the interior is known to be enormous. It is possible, then, that the solid interior is at a temperature far above its melting point and is ready to become molten the moment the pressure is relieved. This pressure is relieved by the folding of the earth's crust in mountain-forming and in other earth movements, and the melted rock is thus forced to the surface where resistance is least. At the same time, water is formed in the rocks, and the explosive force of steam is added to the expansive force of the lava.

Distribution of Volcanoes. Volcanoes usually occur along great mountain chains and near the sea-coast. They form a "ring of fire" around the Pacific Ocean. They are numerous in the Andes, extend along the plateau of Central America, the coast ranges of North America and the Aleutian Islands, thence down the islands east of Asia, through Japan to the Malay Archipelago and New Zealand. The West Indies, many small islands in the Atlantic, the Mediterranean coasts, Iceland, and the Sandwich Islands in the Pacific, also contain active volcanoes.

Extinct Volcanoes. When a volcano loses its energy and ceases to be active, the lava cools in the throat of the crater, and forms



a dense mass of solid volcanic rock. The crater, being plugged up, forms a saucer-like basin on which trees may grow, or water may accumulate after a rain and form a volcanic lake or crater. Examples of extinct volcanoes are found in south-central France.



The cone of an extinct volcano, New Mexico.

As a volcano is gradually worn down, the ashes and lava forming the cone are worn away more quickly than the lava in the throat. Thus this lava *plug* may be left rising sharply above the rest of the country in the form of a peak. Examples of such plugs are to be found in British Columbia. Montreal Mountain is the remnant of a volcanic plug.

Earthquakes. During volcanic eruptions, and oftentimes in mountain-building, the rocks of the earth are cracked and, perhaps, ground against one another until the whole earth for miles around shakes, causing what we know as an earthquake. These are sometimes so severe that houses and bridges are shaken down. In countries such as Japan, which are subject to frequent earthquakes, the houses are usually built of wood, and with only one or two stories, so that they cannot easily be overthrown by an earthquake shock.

A cone built by the mineral deposits of a hot spring in Yellowstone Park.

A great block from Mont Pelée, Martinique.

Devil's Tower, Black Hills, Wyoming. Remnant of an old volcano

Earthquakes sometimes occur beneath the sea and start a great wave of water, much as a wave may be formed by suddenly striking the bottom of a pan of milk or water. Such a wave may travel toward the shore, increasing in height as it goes and, advancing upon the land, may cause great loss of life, and damage to property. In December, 1908, an earthquake destroyed the city of Messina, in Sicily, and this was followed by an earthquake wave which swept many thousands of people to destruction.

XI. THE ATMOSPHERE

Atmosphere. The earth may be said to consist of three spheres of matter; first, the solid portion, or *lithosphere* (*lithos*, a stone); second, the water, or liquid part known as the *hydrosphere* (*hudor*, water); and third, the gaseous part or *atmosphere* (*atmos*, vapour). If the whole earth was once in a gaseous condition, then the gases forming what we call air are the only ones that have so far resisted a change to the liquid or solid state.

It may be, however, that when the earth cools through and through, the atmosphere will, under the influence of extreme cold, cease to be a gas and become a liquid or even a solid.

Granite Needles, Black Hills, South Dakota. The strong rock has not worn away as rapidly as the weaker rock.

The atmosphere may be hot or cold, wet or dry, light or heavy. From our daily experience we are familiar with its changes in degrees of heat, or *temperature*, and with changes in the amount of moisture that it contains. Differences of temperature produce the most conspicuous differences between winter and summer. Differences in weight produce those movements of air which we call winds. Differences in the amount of moisture contained in the air have much to do with determining whether the weather is *fair*, *cloudy*, or *stormy*.

Height of the Atmosphere. It is not known how far the atmosphere extends above the earth. Owing to the effect of gravity, its density decreases as the distance above the surface increases till, at a height of six miles, breathing is impossible and birds cannot fly. One half of the atmosphere is below the height of 3½ miles. We know, however, that the sun's rays have been reflected from the atmosphere at a height of at least 45 miles. The Aurora also has been measured at more than 100 miles above the earth, and meteors which became visible owing to friction with the atmosphere have been seen to burst into flame at a height of 200 miles. Hence, it is probable that the atmosphere extends at least 200 miles beyond the earth's surface.

Composition of the Atmosphere. The atmosphere is composed chiefly of a mixture of two gases, *nitrogen* and *oxygen*, in the proportion by volume of about 79 to 21. In addition to these two gases there is a small amount, about .04 per cent. of carbonic acid gas. Water vapour also is everywhere present in the atmosphere, no matter how dry the climate may be. It is from this vapour that clouds, rain, hail, snow, and dew are formed. The innumerable dust motes which are always present in the atmosphere are believed to be of great importance in the diffusion of light. They may be seen dancing up and down in a ray of light admitted into a darkened room.

Weather and Climate. The conditions of temperature, moisture, and weight of the air existing at any one time, together with the winds, give us our *weather*, and the average weather conditions of any place make up its *climate*.

Soil-making by the Atmosphere. The atmosphere is necessary to us in many ways. All animals breathe it; the land plants secure from it an important part of their food; and it is the chief agent in changing solid rock into fine, productive soil. The moisture in the air helps to weather, or decay the rocks, just as it weathers an unpainted house. Water freezing in the crevices of rocks in winter, or very sudden changes in their temperature, cause them to break apart and become smaller. Anything that loosens the rock particles and helps the moisture in the air to penetrate into the earth, aids in the formation of soils. The loosened, weaker portions of the rocks fall from their own weight and accumulate on the more gentle slopes. The strong portions of the rocks do not weather so rapidly and often stand up in fantastic columns or points.

A deep soil accumulation in North Carolina. Note the absence of boulders or ledges.

In some parts of the world the rocks have decayed to a depth of hundreds of feet. This decayed material forms the detritus, which slowly creeps down hill because of its weight, and, as we have already seen, is carried away by rains, rivers, and other agencies. The finer surface portion of this detritus is mixed with more or less decaying vegetable matter from the trees and grasses, and forms what we know as *soil*.

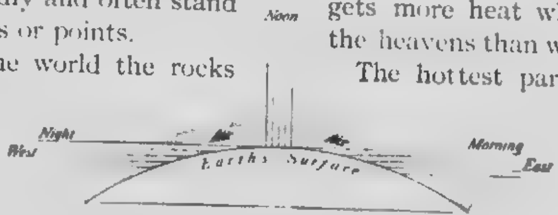
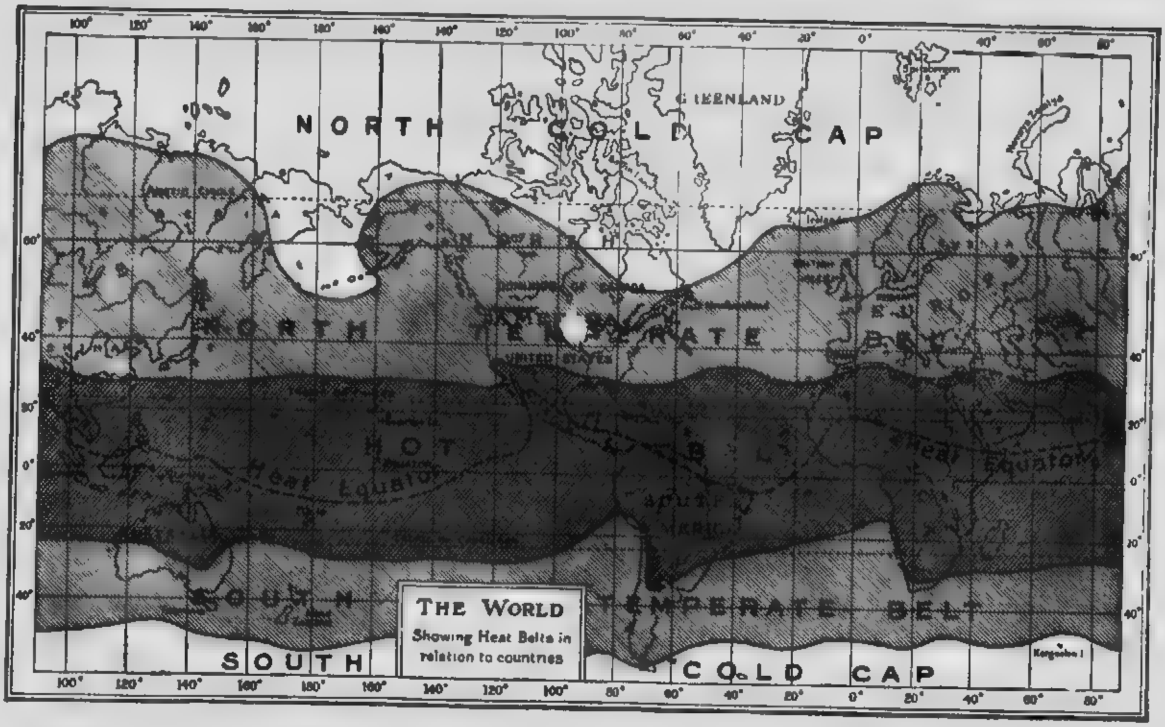


Diagram of a ray of light striking the earth vertically and obliquely. Notice the difference in space covered.

Temperature of the Air. We measure the temperature of the air by means of a *thermometer*, or heat measurer. A temperature of 68 degrees Fahrenheit is considered the most healthful temperature for our houses in winter. A temperature of between 90 and 100 degrees is that of a very hot summer day. Temperatures below 32 degrees are those of the colder times in winter, and a temperature of more than 32 degrees below the freezing point is said to be below zero. Such temperatures are very cold, and are often experienced in many parts of our country during the coldest winter weather. During summer the sun's rays strike the earth more nearly vertically, and are spread over a smaller amount of surface than in winter; hence, an area of a certain size gets more heat when the sun is high in the heavens than when it is low.

The hottest part of the day is usually, not exactly at noon, but in the early afternoon, because then the heat has been accumulating longer. For the same reason the



THE WORLD
Showing Heat Belts in relation to countries

hottest part of the summer in our country is in July and August, and not in June, although then the sun rises highest in the heavens.

Temperature of Land and Water. If the land and the water were heated with equal rapidity, and if they retained their heat equally well, the earth could be divided into five bands or zones of heat, separated from each other by the parallels of latitude which bound the zones of sunlight. But the land is warmed more rapidly than the water and cools off more rapidly. As the ocean waters are constantly in motion in a series of currents, the warmth received by the ocean is carried to different parts of the world, but the warmth received by the land is concentrated. Chiefly because of these facts, the boundaries between the several belts of temperature do not coincide with the tropics and polar circles, although they run in a general east-west direction.

Heat Belts. Extending about the world on both sides of the equator is the broad band known as the *Hot Belt*, in which the average temperature of the year is more than 68 degrees. This belt extends farther poleward and is broader over the land than over the ocean, because the land is more readily warmed than the ocean. It extends farther into the Northern Hemisphere than into the Southern, because there is more land in the Northern Hemisphere.

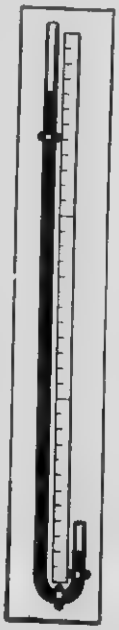
About the poles are two areas known as the *North* and *South Cold Caps*, in which the average temperature of the warmest month of the year is never above 50 degrees. This is the average summer temperature required to ripen the most hardy grains. The south cold cap extends much farther toward the equator than the north cold cap, because there is so much less land near the south pole than the north.

Between these limits are two areas known as the *North* and *South Temperate Belts*. The north temperate belt contains far more land than the south temperate belt, is much broader, and includes the most progressive countries of the world.

On each meridian there is some one place in the hot belt that has a higher average temperature than any point north or south. The line connecting these places is known as the *Heat Equator*. In our summer, when the sun shines more nearly vertically in the Northern Hemisphere, the heat equator is farther north than in our winter. Its average position is shown on the map.

XII. THE GREAT WIND SYSTEMS OF THE WORLD

Winds and Calms. Air moving horizontally is called *a wind*. When you hold up your moistened finger and do not feel it colder on one side than the other there is no wind. The air is then either quiet or rising or falling, and we have what we call a *calm*. Winds are produced by differences in the weight of the air in different places. It is the force of the moving air that turns mills, speeds sailing vessels, and bends trees in a storm. It is the wind also that carries along the sand on a beach or desert and piles it in great hills known as *sand dunes*.



A simple barometer.

The Barometer and its Use. The weight of the air is determined by an instrument known as a weight measurer, or *barometer*. The mercury which fills the tube of the barometer is supported by the weight of the air. As one ascends and leaves part of the air below him, the air becomes lighter and, hence, the mercury in the barometer falls.

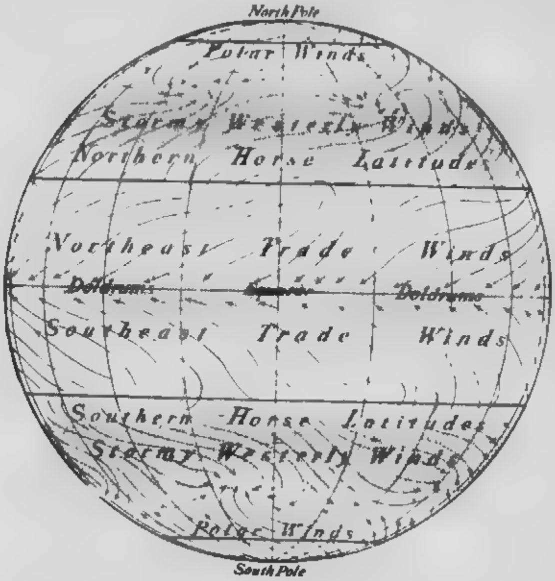
If the pressure at sea level is thirty inches, it will be twenty-nine inches at a height of about 900 feet; twenty-eight inches at 1,950 feet; twenty-seven inches at 2,820 feet; and twenty inches at 10,550 feet.

It is by noting the pressure of the air at different heights, and by comparing this pressure with that at the sea-shore at the same time, that we can most readily measure the height, or *altitude* of elevations above the level of the sea.

Areas of High and Low Pressure. When air becomes heated in any locality, it expands and the density decreases, producing an area of low pressure; that is, an area in which the pressure of the air is low. The same effect will be produced if the heated air contains a great quantity of moisture; for water gas is not so heavy as air. Where the air is cold and dry, an area of high pressure is the result. There will always be a movement of air from areas of high pressure where the air is heavy toward areas of low pressure where the air is light. These facts explain why there is a belt of low pressure between the equator and 10 degrees north latitude, and two belts of high pressure between 30 degrees and 40 degrees, one north of the equator and the other south of it.

Trade-Winds. By observing that in a room the warm air rises to the ceiling, while the colder air is near the floor, we learn that cold air is heavier than warm air. Consequently, the coldest parts of the world generally have heavier air than the warmest. Over those portions of the earth just north and south of the heat equator the cooler, heavier air is continually moving toward the lighter belt near the heat equator, thus forming the great system of winds known as the *Trade-Winds*. These trade-winds are the most constant winds of the world, and are so named because they blow regularly along a definite path.

As the air approaches the heat equator, it rapidly becomes warmer and is therefore better able to absorb moisture. Hence, the trade-wind area, especially over the oceans, is a great *fair weather* belt. The sky and sea are beautifully blue, few clouds are seen, and the brisk moving air is invigorating. Where the trade-winds blow over the land far from any ocean, they can take up more water than the land will furnish. Thus, such regions are deserts with very little rainfall and almost continually clear, blue sky. The best illustration of a trade-wind desert is the Sahara in northern Africa.



The wind systems of the world.

We should expect the trade-winds to blow due north or south, but, as the earth is continually rotating from west to east, the winds are deflected from a north-south course; hence, the trade-winds blow from the north-east in the Northern Hemisphere and from the south-east in the Southern Hemisphere.

Doldrums. At the heat equator, the warm, light air rises, and at a great height flows off toward the polar regions of the world. Immediately bordering the heat equator, therefore, is a region where the air is slowly ascending, and where at the surface we have an area of calms known as the *Doldrums.* The doldrum belt is in striking contrast with the trade-wind region, because it is an area of excessive rainfall and little fair weather. The air in the doldrums is always warm, moist, and depressing, much like a very hot, uncomfortable summer day in Ontario.

Monsoons. From April to October the heat equator is in the Northern Hemisphere; hence, the wind blows from the Indian Ocean toward the land. As soon as the south-east wind crosses the equator, it is turned to the right owing to the rotation of the earth, and becomes a south-west wind. From October to April the heat equator is in the Southern Hemisphere. The north-east trade-wind begins to blow, but as soon as it crosses the equator, it is turned to the east, owing to the rotation of the earth, and becomes a north-west wind. These winds which change with the season are known as *Monsoons.* The best developed Monsoon winds are found in India and along the south-eastern coast of Asia.

Horse-latitudes and Westerlies. At about one third the distance from the equator to each pole, there is a belt where the weight of the air is on an average somewhat greater than at the equator. Over these belts the air is descending to take the place of the surface air flowing toward the equator and toward the poles. The result at the surface is a series of calms known as the *Horse-latitudes.*

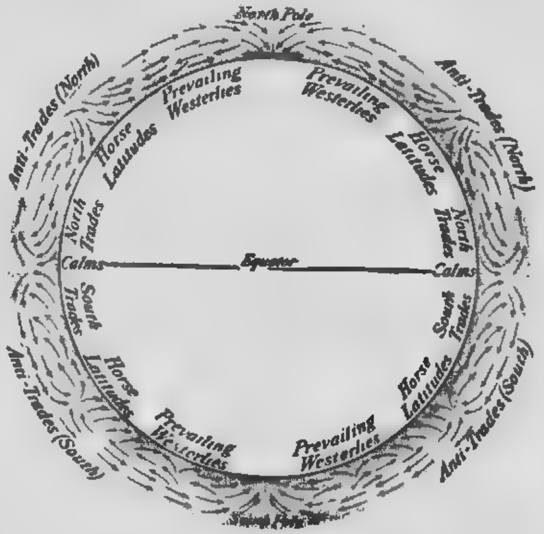


Diagram of the earth showing the general movement of the atmosphere.

These horse-latitudes are boundaries, not only of the trade-winds, but of the great series of winds known as the *Stormy*, or *Prevailing Westerly Winds*, or *Anti-Trade Winds*. The westerly winds circle round and round the world, blowing from the west-southwest in our hemisphere, and from the west-northwest in the Southern Hemisphere. They exist throughout the larger part of the temperate belts, and so blow over the regions occupied by the chief nations of the world. These winds are interrupted by frequent storms, during which the wind may blow from almost any direction. The prevailing direction, however, is from some point in the west.

In the Southern Hemisphere these winds are strong and constant, as the air moves mostly over the ocean, and is not turned from its course by the land. Here they are known as the *Brave West Winds*, because of their strength, or the *Roaring Forties*, from the latitudes in which they are best developed. Sailing vessels between England and Australia are borne eastward by these winds, and find it easier to be carried on by them around South America and back to England, than to try to face them in a return voyage around Africa.

Polar Winds. The other important winds of the world are the *Polar Winds*. These originate in the polar regions and blow from the north-east in our hemisphere, and from the south-east in the Southern Hemisphere. Little is known concerning them.

Summer and Winter Winds. The areas of the world over which the great wind systems blow are not the same in the summer as in the winter; because the weight of the air is differently distributed in the two seasons, owing to the differences in the distribution of temperature. These winds are much more constant over the ocean than over the land; because the lands are so much colder at one season and so much warmer at the other, than the adjoining ocean, and also because the land regions are crossed by mountain ranges and high plateaus which turn the winds from their course.

In the region of the stormy westerly winds the continents are much colder in winter than the oceans, especially in the Northern Hemisphere, and warmer than the oceans in summer. Therefore, along the eastern coast of Canada, for instance, the cold winds blow from the continent in the winter and toward the continent in the summer, always blowing from the area of colder, heavier air to that of warmer, lighter air.

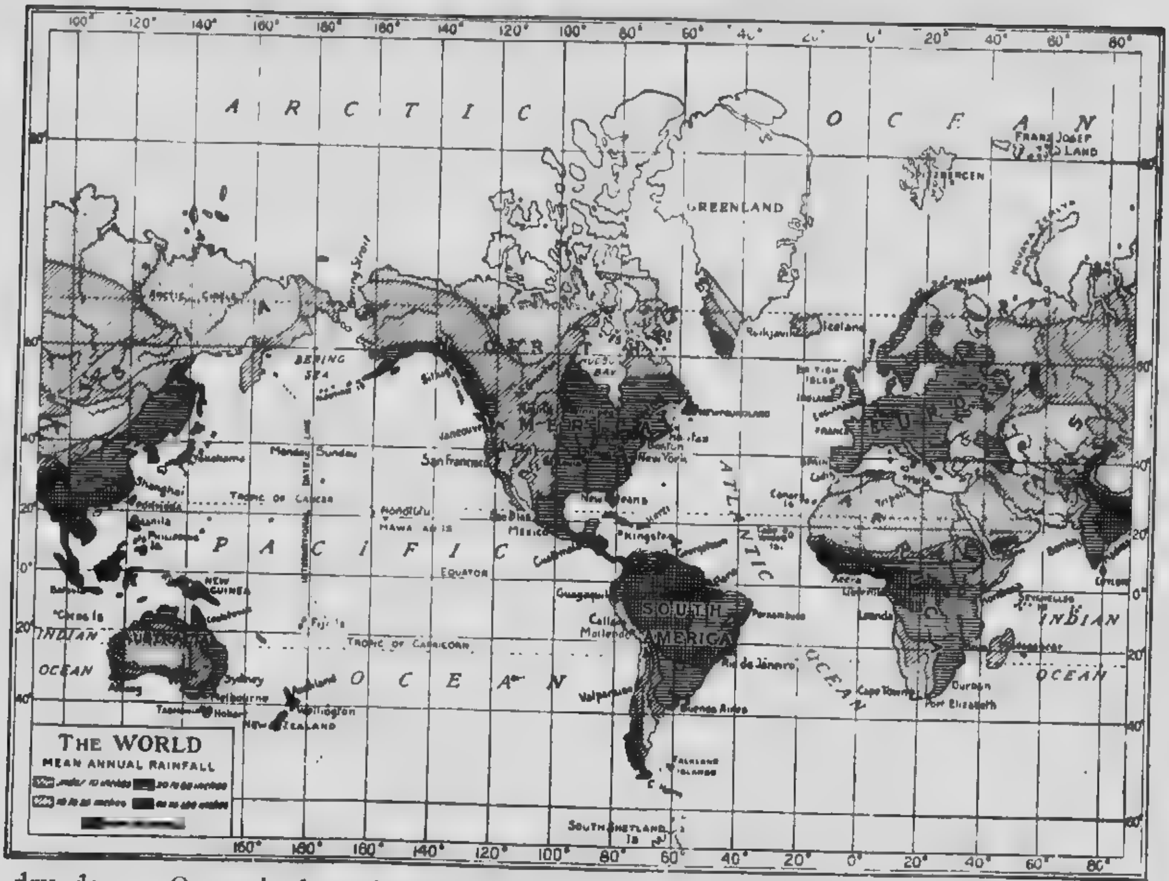
Sea Breezes and Mountain Winds. At certain seasons of the year in regions bordering a large body of water, the winds may change twice a day. In the daytime, when the water is cooler than the land, the winds blow from the water to the land, forming a *sea breeze*. At night, when the land is colder than the water, the wind blows in the opposite direction, forming a *land breeze*. At the time when the wind is changing from one direction to another there is, of course, a calm.

In those parts of the world where there are high plateaus, or mountains, the wind, as a rule, changes its direction twice daily. At night the wind blows down the mountain valleys into the lower parts, beginning first as a gentle breeze and gradually developing into a strong wind, known as a *mountain wind*. In the daytime, the warmer air of the valleys moves up the mountain slopes in the opposite direction, forming a *valley wind*.

XIII. RAINFALL AND ITS DISTRIBUTION; STORMS

Moisture in the Air; Deserts. Everywhere in the world the air contains some moisture. Warm air can hold more moisture than cold air, and warm air if chilled will also lose a certain amount of its moisture. Thus, we often see moisture condense in drops on a pitcher containing cold water, or on a cold window pane of the laundry or the railway car.

Days in which the amount of moisture in the air is small in proportion to what it might hold at the same temperature are



dry days. On such days drum-heads are tight, postage-stamps do not stick together, and hair will crackle as it is combed. When the air is full of moisture, even though we cannot see it in drops, the days are damp. On such days one perspires freely and feels uncomfortable.

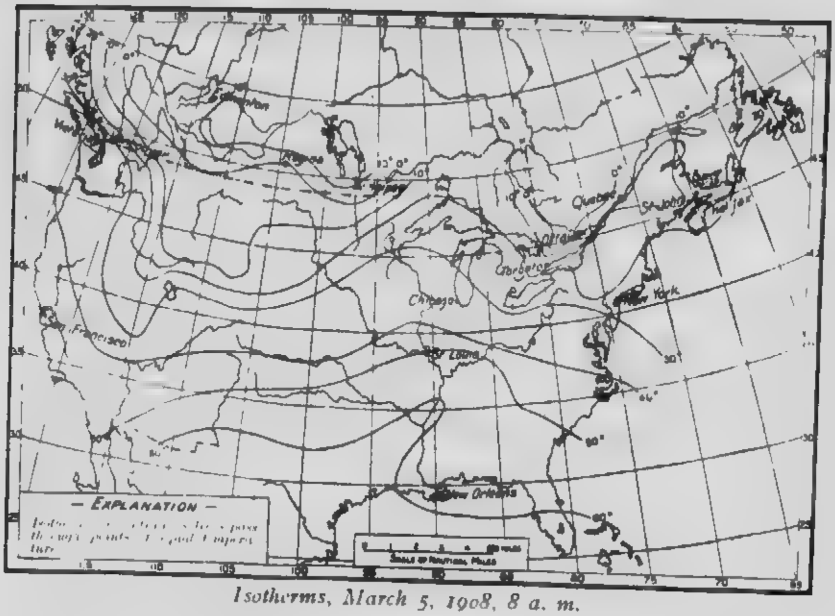
In certain parts of the world it is always dry, and there is so little moisture in the air that it rarely rains. Such regions we know as *deserts*. In other parts of the world the air is always moist, and whenever it is cooled some of the moisture condenses in the form of fog or dew or rain.

A flat-roofed house in New Mexico. Owing to the small rainfall, peaked roofs are unnecessary

Causes of Rainfall. All of the moisture that comes to the surface of the earth in the shape of fog, dew, snow or rain, is called its *rainfall*, and anything that will cool the air so as to cause it to deposit its moisture will produce rainfall.

In the doldrum belt, the warm, moisture-laden air brought by the trade-winds is continually rising and cooling; hence, in much of this region it rains daily. As the doldrum belt moves north and south, the regions over which it passes have a rainy season and then a dry season.

Whenever winds are obliged to move over



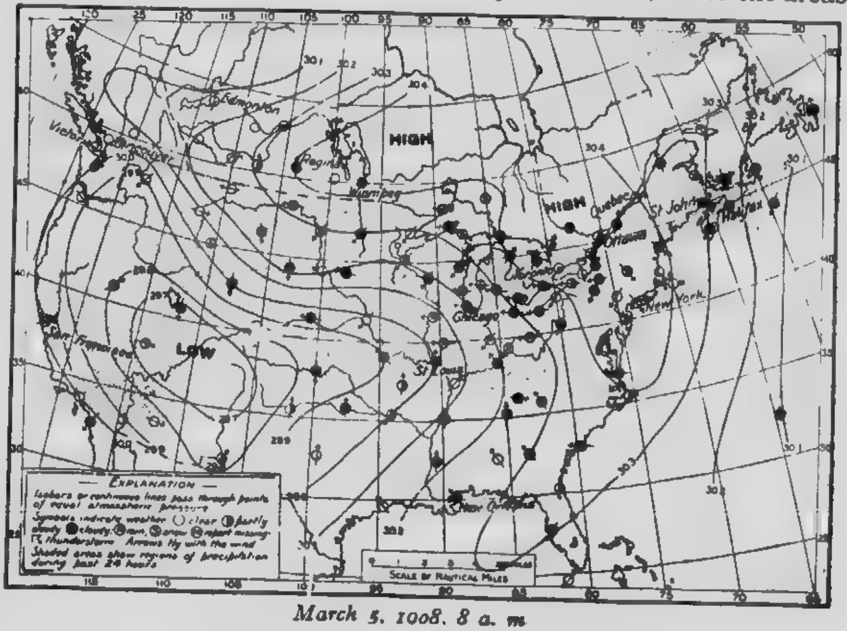
Isotherms, March 5, 1908, 8 a. m.

mountains, the air is cooled and rainfall usually follows. Trade-winds thus produce rainfall on the coast of Brazil and eastern Australia, and the prevailing westerlies produce rainfall on the north-western coast of America, in the northern British Isles, and in Norway.

Descending air grows warmer constantly, gaining one degree of temperature for about every 300 feet of decrease in height. As it gains in temperature it becomes better able to absorb moisture. The air descending over the land cannot usually secure all the moisture it can hold, and is therefore dry. Thus, the leeward side of mountain ranges is usually drier than the windward side, as found in Australia and British Columbia.

Storms, or Cyclones. Canada has frequent storms. These storms are caused by the inflow from all sides of heavier air toward regions of lighter air. Toward the centre of a storm the barometer falls, because of the decreased weight of the air. Therefore, a storm centre is known as a *low*. Such storms or *cyclones* move from west to east across the country, whirling as they go, and often drawing the air in toward them for many hundreds of miles.

The in-rushing air is drawn upward to high altitudes, circling around the centre of the storm as water circles about the opening in the bottom of a basin as it flows out. If the air is drawn from over the ocean, it takes in a large amount of moisture which falls as rain, when the air rises near the centre of the storm. Thus, those regions which have frequent storms, as do the areas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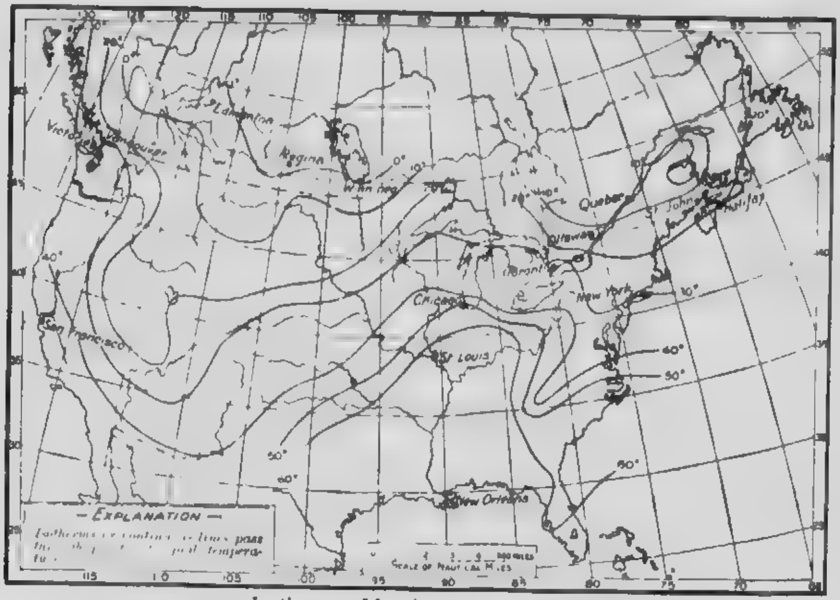
New Orleans
— EXPLANATION —
Isobars or continuous lines pass through points of equal atmospheric pressure
Symbols indicate weather ○ clear ◐ partly cloudy ● cloudy Ⓡ rain Ⓢ snow Ⓜ report missing
T thunderstorm. Arrows fly with the wind
Shaded areas show regions of precipitation during past 24 hours
Scale of Nautical Miles

March 5, 1908, 8 a. m.



Isotherms, March 6, 1908, 8 a. m.

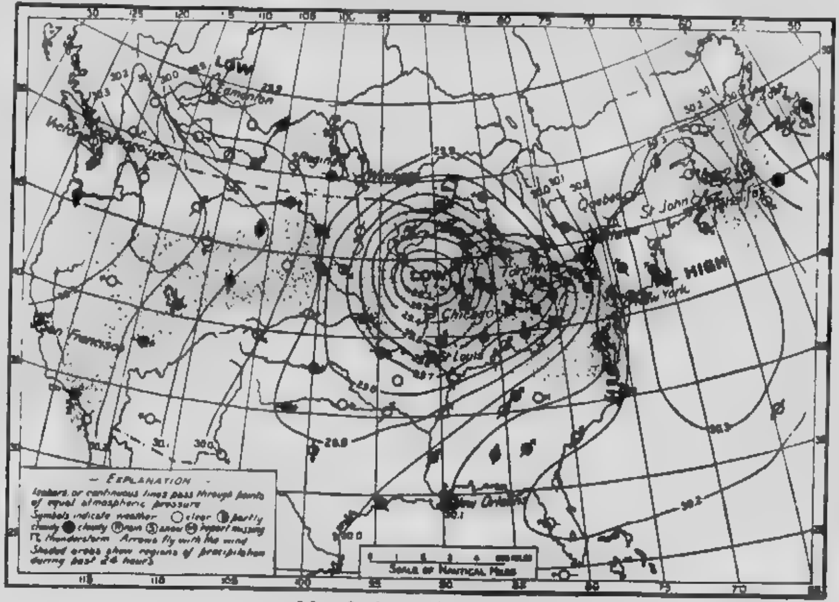
of the prevailing westerly winds, have also frequent rains. Hence, in Ontario, the south-easterly winds almost invariably produce rainfall. In computing the quantity of rain, ten inches of snow is regarded as equal to one inch of rain.

Storm Winds. Since storms generally move across North America from west to east, at the beginning of a storm in Ontario the wind usually blows from the north-east or south-east, increasing in intensity as the storm centre comes nearer to us. As the storm centre passes and the clouds break away, the wind changes into some quarter of the west.

In winter the fair-weather winds are usually from the north-west. They are very cold and dry and may cause such sudden changes of temperature that we may have a *cold wave.* Such a north-west wind may blow for several days, the cold increasing and the barometer constantly rising. There may finally come a period of fair, calm weather. This shows that we are in an area of high pressure which follows the low pressure of the storm. It is then we have our coldest winter weather.

The on-coming of a storm, therefore, is usually marked by the falling of the barometer, due to the lightness and moisture of the air, and the on-coming of fair weather by the rising of the barometer, due to the dryness and heaviness of the air.

Tornadoes. Sometimes there are local but very violent storms known as *tornadoes.* These usually occur on warm days, when the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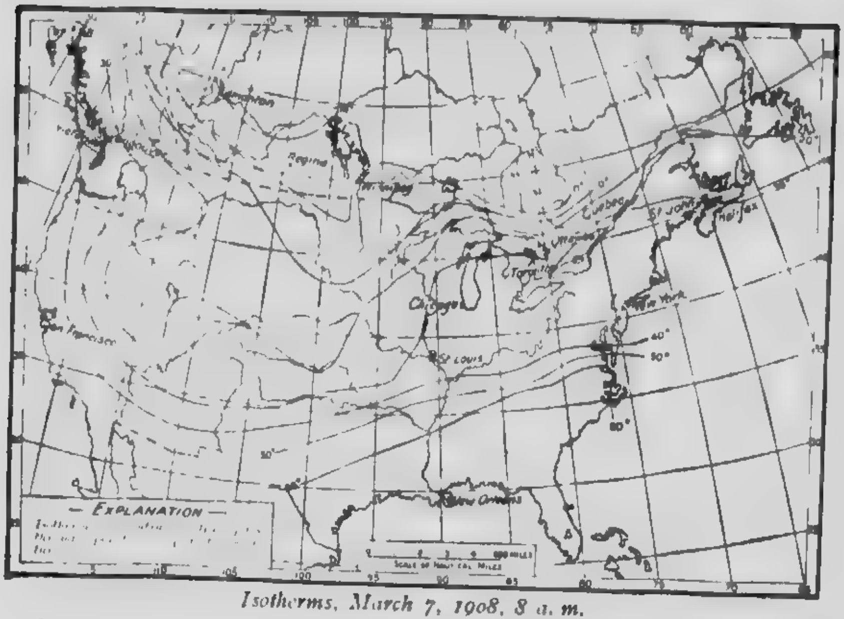
Isobars, or continuous lines pass through points of equal atmospheric pressure
Symbols indicate weather ○ clear ◐ partly cloudy ● cloudy Ⓡ rain Ⓢ snow Ⓜ report missing
T. thunderstorm. Arrows fly with the wind
Shaded areas show regions of precipitation during past 24 hours
Scale of Nautical Miles

March 6, 1908, 8 a. m.



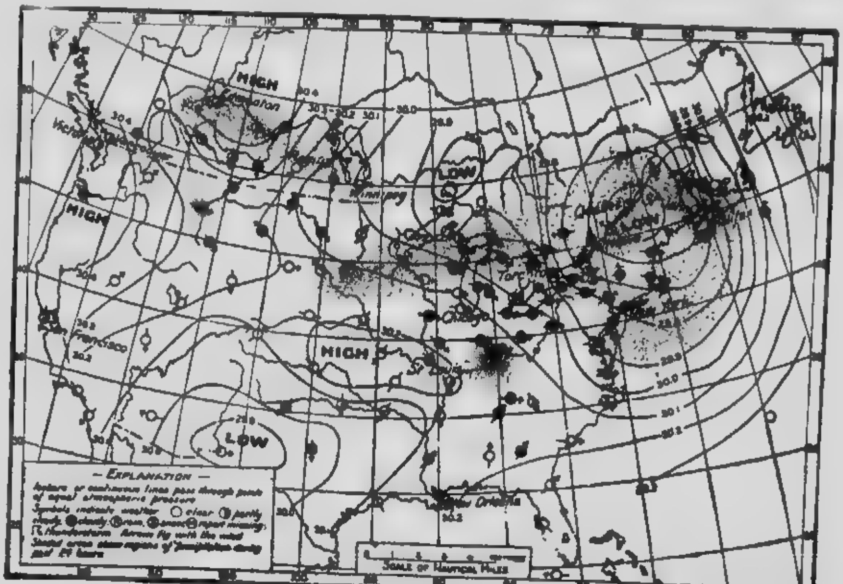
Isotherms, March 7, 1908, 8 a. m.

surface air is very hot and full of moisture and when the overlying air is heavy and cold. Finally the warm air rises, the cold air falls, and a terrific whirling wind is developed, followed by heavy rainfall. A tornado often causes an enormous amount of damage.

XIV. THE OCEANS

Ocean Currents. The water of each ocean, continually circling about in the ocean basin, gives us a system of *ocean currents* or *eddies*. Bordering the equator, where the trade-winds blow from the north-east or south-east, the waters of the ocean are blown toward the west until they are deflected by the continents. Turning then toward the poles, and being deflected, like the winds, to the right in the Northern Hemisphere and to the left in the Southern Hemisphere, the waters flow away from the equator until they move into the region of the westerly winds. They are then blown along to the eastward until they again strike the continents, when they turn again toward the equator.

The Great Eddies. These systems of currents are named from the oceans in which they occur, as the *North Atlantic Eddy*, the *South Atlantic Eddy*, the *North Pacific Eddy*, the *South Pacific Eddy*, and the *North* and *South Indian Eddies*. Around the south pole is the great eddy of the Antarctic Ocean, which is moving constantly eastward, in the same direction as the southern part of the eddies of the several oceans. In the centre of each of the great eddies there is an area of quiet water with



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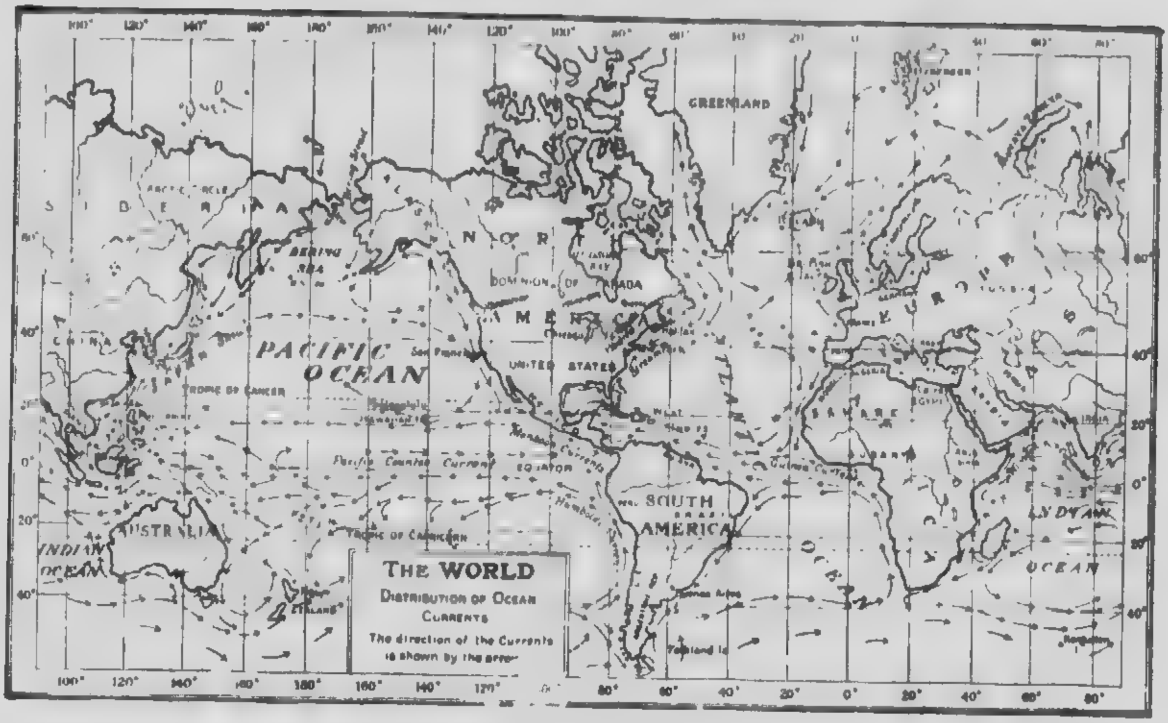


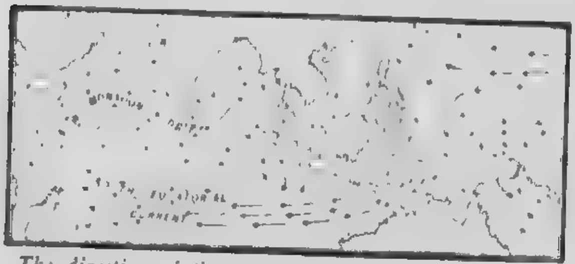
but little motion. It is believed that the winds are the chief cause of the ocean currents.

Currents of the Indian Ocean. The best proof that the wind is the great cause of ocean currents is the fact that in the northern Indian Ocean the currents change their direction in accordance with the direction of the monsoon winds. In the summer, during the south-west monsoon, the currents move from west to east in the northern part of the ocean, and from east to west in the southern part. In the winter, during the north-east monsoon, the currents move from east to west in the northern part of the ocean, and from west to east in the southern part.

Warm and Cold Currents. Certain portions of the system of ocean currents are particularly well known and have been definitely named. For instance, in the North Atlantic there is a stream issuing from the Gulf of Mexico, known as the *Gulf Stream.* This stream of clear, warm water unites with the western portion of the North Atlantic Eddy, called the *North Atlantic Drift* because of the slow motion it has, and north of Cape Hatteras, is not distinguished as a separate current. A similar current, known as the *Japan Current,* or *Kuro Shiwo,* extends from Japan part way across the Pacific Ocean.

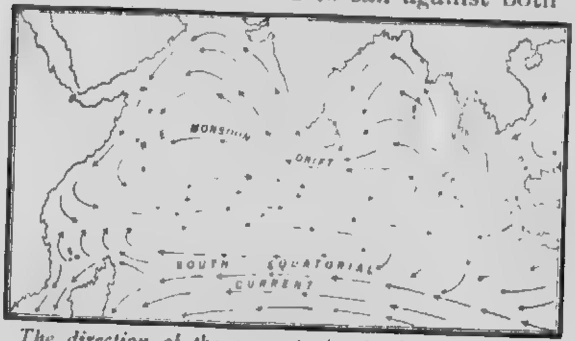
A cold current, known as the *Labrador Current,* creeps down along the eastern coast of North America until it finally settles beneath the waters of the North Atlantic Drift off the coast of New England. The mingling of the warm water of the Gulf Stream with the cold water of this current produces the fogs that prevail on the banks of Newfoundland.

Importance of Ocean Currents. The system of ocean currents keeps the waters of the ocean constantly in motion, so that no part of it gets unduly warm. As the westerly winds move across the warm ocean in winter they are tempered by the warm water, and reach the continents to the east very much warmer than they were when they started across the ocean from the continents to the west. It is for this reason that the north-western coasts of North America and Eurasia are so much warmer in winter than the north-eastern coasts in the same latitudes



The direction of the currents in the Indian Ocean in summer

The ocean currents are also important, because they aid vessels going in the direction of their flow, and impede vessels going in the opposite direction. Columbus in his voyage to America had to sail against both the currents and the winds until he finally came within the influence of the trade-winds, which blew him along to the island of San Salvador.



The direction of the currents in the Indian Ocean in winter.

XV. WAVES AND TIDES

Formation of Waves. The water of the ocean is not only in motion through this system of ocean currents, but it also has two other motions, known as *waves* and *tides*.

Waves are formed by the friction between the wind and the surface of the water, causing the latter to rise and fall, and thus forming crests and troughs which are known as waves. The water itself moves forward very little, but the wave form travels through the water great distances. As the wave approaches the shore where the water is shallow, it increases in height and decreases in breadth until the top portion, which, owing to the friction of the lower part on the bottom, moves faster, finally falls with a blow on the shore, making *breakers*, or *surf*.

Tides. Tides are periodic movements of the water that occur over the ocean, in estuaries, and in some bays and gulfs. In most places, the whole surface of the water rises and falls twice each day, with an interval of twelve hours and twenty-five minutes between high tides. When the water is rising we call it *flood tide*; when it is flowing seaward we call it *ebb tide*.

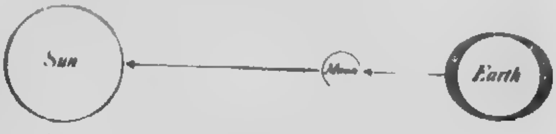


Diagram showing the formation of tides at time of new moon.

Cause of Tides. Tides are caused by the attraction of the moon and the sun. At the time of the new moon, when both the sun and the moon are on the same side of the earth, they are drawing by the force of gravitation in the same line. At this time the tide is much higher that at those times in the month when the moon is drawing along one line and the sun along another. At full moon, when the sun is on one side of the

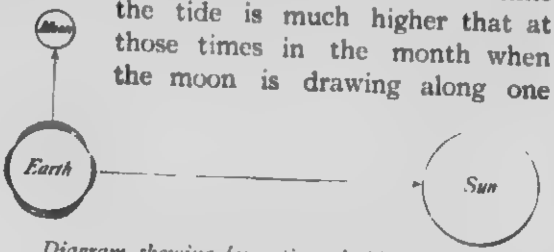


Diagram showing formation of tides at a time half-way between new and full moon.

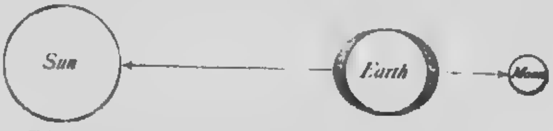
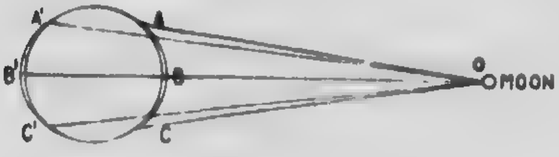


Diagram showing formation of tides at full moon.

earth and the moon on the other, there is also a very high tide. Sailors need to know when high tide will be, so as to take advantage of it for entering or leaving ports with shallow harbours



Earth and moon.

The following is Dr. Emerson E White's explanation of the tides:

Let E equal the attraction of the earth, and M equal the attraction of the moon at B, and M' the attraction of the moon at A and C Since the distance O B is less than O A or O C, M is greater than M'. Hence E M is less than E M', and hence the water at B is *lighter* than at A or C, i.e., has less specific gravity, and will be lifted by the surrounding heavier water.

Again, let E equal the attraction of the earth, and M equal the attraction of the moon at B', and M' equal the attraction of the moon at A' or C'

Since the distance, O B' is greater than the distance O A' or O C', M is less than M'. Hence E+M is less than E+M', and hence the water at B' is lighter or has less specific gravity than at A' or C', and is lifted by the surrounding heavier water.

High and Low Tide; **Tidal Bores**. The difference between high and low water varies in amount in different places. In inclosed seas like the Mediterranean and the Baltic, there is practically no tide, while in others there is a change of several feet. The highest tides are found in funnel-shaped inlets like the Bay of Fundy, at the head of which they reach a height of more than fifty feet above low-water mark. On gently sloping shores the advancing or retreating tide may extend over a great breadth of surface — perhaps a mile or more. On steep shores very little land is exposed between high tide and low tide.

The tide rushing in and out of the mouths of estuaries prevents the sediment, or detritus brought down by the rivers from accumulating there, and helps to keep harbours sufficiently deep for the use of large vessels. In some estuaries the tide advances in a series of great waves, so that the time between low and high water is only a few minutes. This phenomenon is known as a *tidal bore*, and is particularly well developed at the mouths of the Seine, the Yangtse-kiang, and the Amazon

XVI. SHORE FORMS

Deposits Made by Waves and Tides. Waves and tides are constantly wearing away the land and moving the detritus produced by their own work or brought to them by rivers An accumulation of detritus along the shore forms a beach.

If the beach is pebbly, the pebbles are washed back and forth and rubbed together until they are worn into sand. The finer detritus is carried into deep water and there deposited, while much of the coarser is swept along the shore and temporarily deposited there. The detritus deposited offshore sometimes forms shallows in the ocean, or builds up continental shelves off coasts. It is over these shallows that fish are most abundant. The Grand Banks off Newfoundland, the great fishing ground for Canadian vessels, is an excellent illustration of a shallow area on a continental shelf.

A small beach The action of the water is slowly wearing away the rocky shore.

On gently sloping shores there is usually a beach which may be miles in length. Sometimes on such coasts an accumulation of detritus is built up at some distance from the shore, which, when it reaches the surface of the water, forms a *barrier beach.* Between the barrier beach and the shore line there is usually a *lagoon* of more or less quiet water into which a river flows. The barrier beach is sometimes broken every few miles by a narrow channel, which makes it possible for the lagoon to be used as a harbour.

A straight, regular, sandy beach, built above a gently sloping shore.

Sea Caves and Promontories. Where the waves break with force at the foot of steep and rocky cliffs, they often wear away little [illegible]nes called *ovens.* Caves formed [illegible] numerous along the coast of [illegible]

The soft rocks bordering a body of water are worn away more rapidly than the hard rocks, and the latter often project as *headlands* or *promontories.* The end of such a promontory is usually called a *cape.* Capes are also sometimes built of sand, where the waves and currents build a sand-spit out into the waters.

Work of Corals. In the warmer regions of the world, as about Florida, there are many islands and reefs built up under the water from the bodies of small animals known as *corals.* As they grow upward, they die below, leaving the stony coral material as their foundation. They can grow only where the water is warm and continually in motion

Some of these coral islands, especially in the Pacific Ocean, are more or less ring-shaped, with a quiet body of water, or lagoon, inside. Such a coral island is known as an *atoll,* and is believed to have been formed by the coral polyps building a reef around an island, which began to sink slowly as the animals continued to build.

Ancient Shore Forms. Sometimes a great area of land, once covered by water, is exposed In such a case the land forms which have been made by the deposits from the waters, or by the cutting of the waves, are left as evidences of the former presence of the water. A knowledge of the land forms built by the waves, tides and currents enables us to explain the history of many regions which were once covered by water, but from which the water has now disappeared. These old forms are found in many parts of the world, but some of the best examples are about Great Salt Lake, in Utah, where the old shores rise in places more than a thousand feet above the level of the lake, showing its former great extent.

A small beach in New Brunswick built up by the accumulated detritus. Note the lagoon behind it.

XVII. GLACIERS

What a Glacier Is. A very long time ago, the northern parts of North America and Europe were covered by a great mass of ice similar to that now found about the south pole, and that covering most of Greenland. These great masses are known as *continental glaciers*. The work they did in changing the shape of the land is well illustrated by the work now being done by the smaller glaciers occupying the upper portions of river valleys in British Columbia and in Switzerland.

The wave-cut shore of Cape Blanco, showing a headland and an island.

The ice of the glaciers is formed by the accumulation of snow, which, for many years, has been packed into a solid mass by its own weight, very much as a boy can pack soft, white snow into a hard, bluish snowball.

Work of Glaciers. Glaciers are not stationary, but move slowly outward over the land, scraping and scratching it as they go. Large rocks are picked up and bodily carried along; small rocks are rubbed together and ground to pieces; while the fragments in the bottom of the ice scrape over the land, leaving scratches in the rocks, which show the direction in which the ice moved. These are to be seen at many places in Ontario, wherever rock surface is exposed Regions that have been covered by glaciers have thus lost a large part of the soil that was once formed by the slow weathering of the rocks. The hilltops have been rounded, and the ice as it melted has left the deposits scattered irregularly over the land, particularly in the river valleys.

Moraines. Where the ice melted at one place for a considerable time, great masses of unsorted detritus of many kinds and of all sizes, from very fine powder or rock flour to boulders as large as a small house, were left. This formed an irregular ridge known as a *terminal moraine*.

A broad band of old moraines extends through central Ontario from Trenton, westward into the Counties of Wellington and Waterloo.

Lakes and Waterfalls Due to Glaciers. Innumerable little lakes fill the depressions scooped in the rock or lying between the moraines or accumulations of sand. In northern Ontario and Quebec there are thousands of such lakes. As the glaciers retreated and rivers began to flow, these gradually deepened their channels, cutting down in many places to hard rocks lying below a thin accumulation of glacial deposit. At such points *waterfalls* were formed. These furnish power for mills of various kinds, especially in eastern Canada.

A ledge, rounded and scratched by a glacier.

Soil Formed by Glaciers. The detritus left by glaciers, as it weathers, forms very rich soil, because it is made up of so many kinds of rock. Here and there, in places, however, the glacier moved over very hard rock, thus producing great numbers of boulders which still cover the surface in many places, and so render it difficult to till. Some of the boulders were deposited hundreds of miles from the place where they were formed.

A valley glacier in Switzerland. The medial moraine is shown at the junction of the two glaciers.

Valley Glaciers. *Valley Glaciers*, like those of Switzerland, British Columbia, and Alaska, also carry deposits scattered along their sides, which, when the glacier melts, form *lateral moraines*. These glaciers often carry many streaks of glacial deposit down the centre of the ice, showing where the lateral moraines of two streams of ice came together. These united lateral moraines are known as *medial moraines*.

XVIII. DISTRIBUTION OF PLANTS

Where Plants Grow. The land on which we dwell, the water of the ocean, rivers, and lakes, and even the air, furnish homes for enormous numbers of different kinds of plants. Many of these plants are of great importance, because they furnish us the materials for food, clothing, and shelter, and because they serve as food for animals.

Land plants thrive best where the soil, temperature, and moisture are best suited to furnishing them the food necessary for their growth. The character of the climate determines the length of the growing season; and the length of the growing season determines the distribution of the various species of plants over the world; for some plants grow in a few weeks, while others require many months. We, therefore, find plants varying widely in their character from the polar regions toward the hot belt

Vegetation Regions. Since the nature of the vegetation depends mainly upon the amount of heat and moisture, we may distinguish three great classes of vegetation regions: *forests*, in which, owing to a sufficient supply of heat and moisture, the trees grow high above the grasses and shrubs and other forms of plant life; *grasslands*, in which grass abounds, but where, owing to insufficient moisture, trees are practically absent, except perhaps along the rivers; and *deserts*, in which, since there is little moisture, plant life is very scarce, except the prickly forms like our spring sage brush and cacti. The most luxuriant forests are the tropical forests found in the hot belt. Between the hot belt and the temperate belt, where

A valley glacier in the Rocky Mountains. *The lateral moraine deposits are on each side.*

the rainy season comes only once a year, we find much open grassland, known as *savannas*. The well-watered portions of the temperate region have extensive forests; the rainless parts are deserts; while between the desert and the forest areas are the temperate grasslands, or *steppes*. In the north cold cap, where the growing season is short, there is an extensive boggy area known as the *tundra*, in which grasses and mosses grow in abundance. The coldest polar regions consist of barren, icy wastes where few plants grow.

A dense forest growth, in British Columbia.

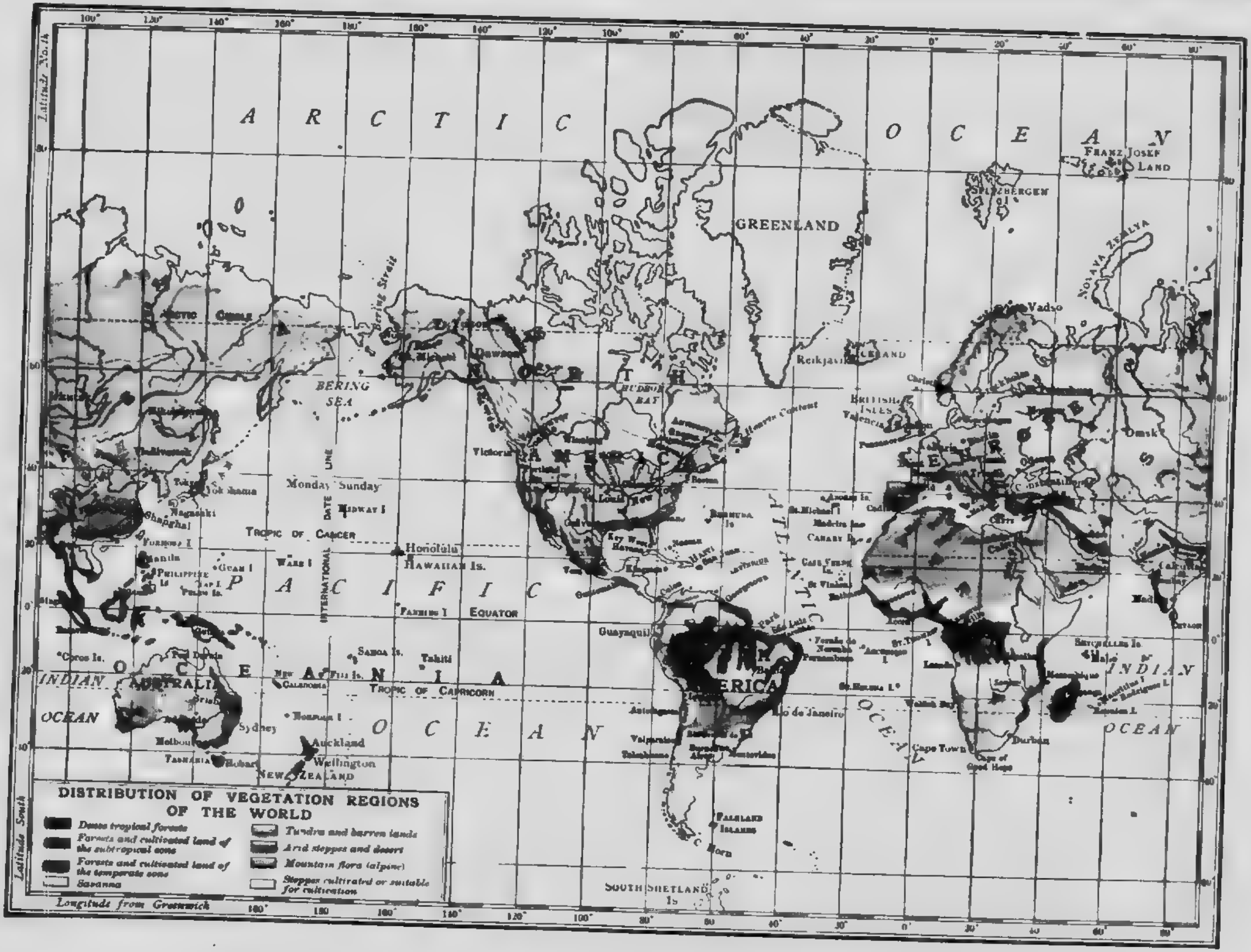
Vegetation and Altitude. As the climate changes, becoming colder as we ascend a mountain or a high plateau, so the vegetation changes with the altitude, even in the hot belt. We may find the plants of several different vegetation regions on any high mountain, while the top of the mountain may be snow-capped and an ice desert the year round. Thus, mountains may form little plant islands, banded from foot to summit with widely different forms of vegetation.

Vegetation and Slopes. Winds are the great carriers of moisture, and since it is moisture that determines the difference between a desert, a grassland, and a forest, anything that causes the winds to lose their moisture greatly affects vegetation. The windward side of mountain ranges which receive the moisture-laden breezes from the ocean, is usually forested. The leeward side, being dry, may be as barren as a desert, as in Utah and other western states. Lowlands, if situated in the moist regions of the world, usually contain great numbers of lakes, bogs, or swamps.

In a hill country, the gentler slopes are usually devoted to crops and grass fields, while the steeper slopes are given over to forests and to grass for the pasturage of cattle. Crops planted on hillsides are liable to be washed out during a heavy rain. It is therefore best to have hillsides devoted to vegetation that covers the ground closely, such as grass or trees.

Since vegetation renders the soil porous and prevents it becoming hard, rain-water soaks readily into the ground. It oozes out again slowly, feeding the streams, regu-

A temperate grassland with scattered groups of trees.



DISTRIBUTION OF VEGETATION REGIONS OF THE WORLD lating their flow, preventing floods due to storm-water, and retarding the washing down of soil into the valleys.

Tropical Forests. The tropical forests are the regions of the densest vegetation in the world. As they lie near the heat equator with its almost daily rains, they have abundant moisture. The warmth is great and the sunshine ample. The conditions are so favourable that the vegetation produces what are known as *tropical jungles*. In addition to the trees, which may grow to a great height, the ground is covered with grasses and bushes, and over the trees and around their trunks twine creepers and the roots of plants that take their food from the air. As a result, the tropical forest is dark and gloomy. The greatest are those of Central America, the Amazon, the Congo, and the East Indies.

The forms of vegetation growing in these forests are for the most part unfamiliar to people living in Canada. They include many trees like the banana, plantain, breadfruit, and cocoa-nut palm, which furnish food to the native peoples. The rubber tree of the tropical forests furnishes us crude rubber. The best dye-woods and most valuable cabinet woods come from these regions, as do also the common spices, such as cloves, nutmeg, cinnamon, ginger, and pepper. The East Indies, particularly, produce an enormous quantity of bamboo, a giant grass sometimes growing to a height of sixty or seventy feet. It is used in various ways the world over, especially in the manufacture of cane furniture.

Tropical palm, showing the peculiar trunk growth.

Savannas. The regions near the northern and southern tropics, as we have seen, have but one rainy season a year. At that time, all vegetation bursts forth and grows abundantly for a few weeks, and the whole region is covered with green grass and blooming flowers. When the rain stops, everything dries up and turns brown and gray; but the grass retains its nourishment when dried, and furnishes food for cattle.

These grassy regions, known as *savannas*, are found in Central America, in the valley of the Orinoco (where they are known as *llanos*), south of the wet jungles of the Amazon (where they are called *campos*), just north and south of the wet jungles of Africa, in south-eastern Asia, and in northern Australia.

Temperate Forests. In the Northern Hemisphere the belt of temperate forest includes many kinds of trees: in the northern portion, mostly evergreens such as pines and spruces; in the southern portion, largely deciduous trees such as oaks, maples, etc. The southern portion of this region, which borders on the tropics, is sometimes called the subtropical forest, because most of its trees do not thrive where the temperature is even cool.

The people of the eastern part of Canada live in the region of temperate forests, though the forests have largely disappeared. This region has abundant rains, well distributed throughout the year, and in those parts where the sunshine and the rainfall are both abundant, as they are in the southern portions of the belt, we find both deciduous and evergreen trees.

Owing to the great variety of plant life that grows in the temperate forest region, the people can carry on almost every possible occupation. Agriculture, grazing, and lumbering depend entirely upon the distribution and kind of plants. Owing to the variety of its natural riches and because of its healthful climate, the temperate forest region produces a large portion of the food products of the world. Hence, the most progressive nations as well as the densest population of the world live on the belt of *temperate forests.*

Palmetto trees in a sub-tropical forest.

Arid Deserts; Oases. In the interior of the continents and on the leeward side of the great mountain ranges (particularly in the area where the westerly wind loses most of its moisture on a mountain barrier) and in the trade-wind belts where the moistureless wind blows constantly over the land, as in North Africa and Peru, we have regions of arid deserts, where but little vegetation grows. These are occupied chiefly by wandering people, dependent upon the flocks which they drive from place to place in search of food.

A Spanish oak with its hanging moss.

Where vegetation exists in the desert, it is usually in the form of spiny or fleshy cacti, the sage brush, or similar plants. In the few places where water comes to the surface, forming natural camping grounds for people moving through the desert, and furnishing water for the soil, we have small, fertile spots known as *oases.* The oases within the Sahara Desert are so important

Pine growth in a temperate forest region.

that they are better known than many large towns in more densely inhabited regions.

Desert vegetation.

Steppes and Prairies. In the temperate belts, lying between the temperate forests on the one side and the arid deserts on the other, are regions of semi-arid country in which the rainfall is between ten and twenty inches. These regions, or *steppes,* are natural grasslands and great grazing countries. The population is rather thinly scattered, but with increased use of irrigation, by means of which water is secured for plant growth, grazing is gradually giving place to agriculture. A large part of the western plains in the United States is a steppe region, but the great steppe land is east, west, and north of the Caspian Sea, in Eurasia. Steppes also extend over a considerable portion of South America, South Africa, and eastern Australia, in all of which regions grazing is an important industry.

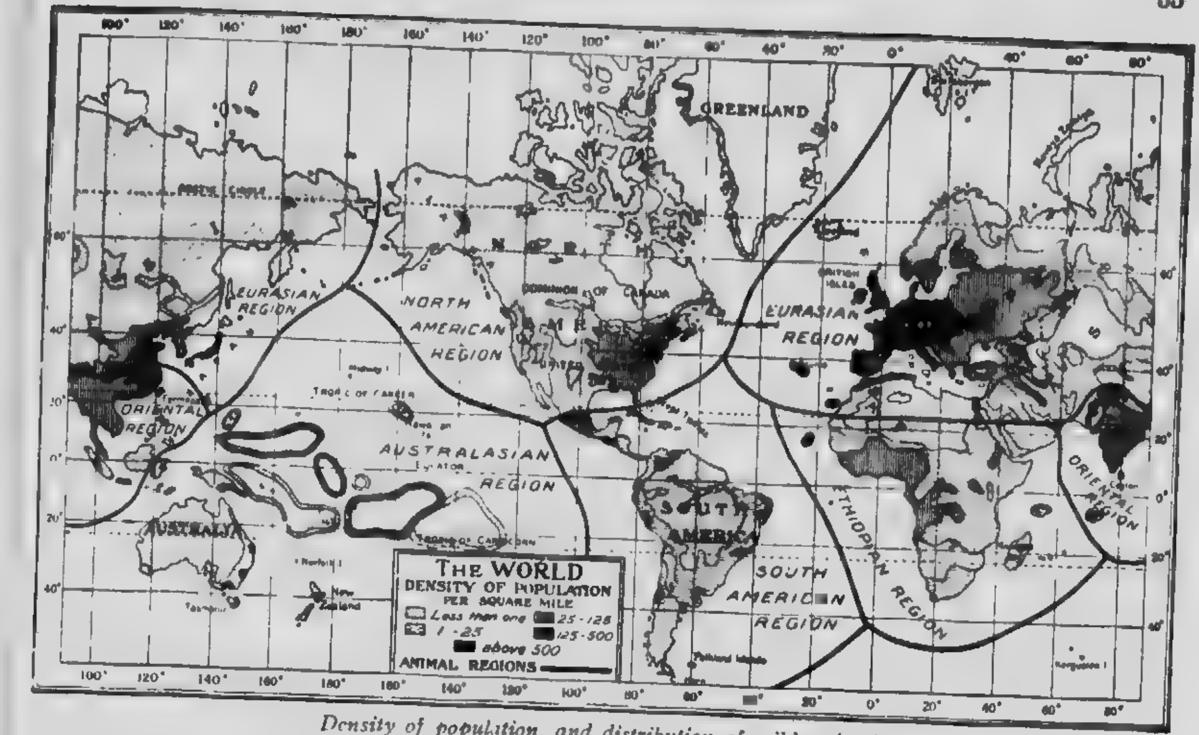
To the north of the steppe region in North America, are the prairie regions of the North-West. Here the rain-fall is from 12 to 20 inches and is sufficient to provide for profitable agriculture and not merely for grazing.

Tundra and Ice Deserts. As we go toward the poles from the temperate regions, the vegetation gradually becomes dwarfed and the trees fewer. Finally trees and bushes are left behind, and we come to a region in which only berries, mosses, and quick-blooming plants grow in a thin surface layer of soil from which the frost has melted. This region is known as the *tundra,* or *barren lands.* It is occupied largely by wild animals, and by hunting tribes who live on the edge of the temperate forests or on the sea-shore in winter, and hunt in the forests in summer. The people wander from place to place and live in homes that can be easily moved.

In the Northern Hemisphere, north of the tundra and on the border of the frozen deserts, dwell the Eskimos, who live entirely upon animal food obtained chiefly from the ocean.

A view of the Nile and the Pyramids.

In the vast ice-fields of the frozen desert about the north and south poles, no people can live.



Density of population, and distribution of wild animals.

XIX. DISTRIBUTION OF ANIMALS

Dependence of Animals upon Plants. The distribution of animals over the world is closely related to the distribution of plants; for all animals depend directly or indirectly upon plants for their food. Animals that live solely on plants are called *herbivorous*. Animals, like the great cat family which includes the lion and the tiger, live upon other animals, and are called *carnivorous*. But, as the victims that furnish them food depend upon grass and vegetation for their sustenance, plants are of importance to them, also. Other animals, including man, eat both plant and animal food, and are called *omnivorous*.

A group of moose.

Animals also need shelter and a certain degree of warmth. Some animals, like seals and certain birds, move from place to place with the season so as to secure food and comfort. Others, living in the ocean, swim freely from place to place, remaining usually in waters of a certain temperature. Other animals again, like the corals of which we have spoken, and oysters and clams, live on the bottom of the ocean in its shallower parts, and are dependent upon the waters that move by them for their food.

Relation of Animal Characteristics to Regions. We may study the distribution of animals according to whether they live in the deserts, the grasslands, or the forests. In the grasslands, the larger animals include our common cattle, the many forms of deer and antelope, and the buffaloes which formerly lived in such great numbers in North America. In the tropical forests, we find apes, bats, and many of the animals that live almost entirely on nuts and fruits. In the outskirts

The white polar bear from the Arctic regions.

The large Kodiak bear of Alaska.

of the forests and the grasslands, are found the carnivorous species, which prey on the animals of both these regions. They are often the colour of the grass in which they live, and so lie in wait for their prey without being seen.

The animals of the desert are nearly all a grayish-brown, to resemble the desert region itself. Of these the coyotes and the prairie-dogs, the gophers of our western plains, are excellent illustrations.

The coyote of the western prairies.

In the steppe region, where the land is brown during the dry season, the animals are a brighter brown. In the tropical forests, many of the insects and birds are green, like the vegetation about them. The green parrots, sometimes kept as pets, and the many-coloured humming-birds of South America, are tropical forest dwellers.

A group of buffaloes.

The polar bear and other arctic animals are white like the snows in which they live. Others, like the arctic fox and the bird known as the ptarmigan, are white in winter, but change their colour in summer when the snow has disappeared. The protective value of this relation of colour to region is obvious.

Animal Regions and Resemblances. It has been found better, however, to consider the distribution of animals in accordance with their general resemblances. All of North America north of Central America, all of Eurasia north of the Himalayas, and Africa north of the Sahara Desert, have many animals which are alike. These are the bear, the elk, the reindeer, the fox, the wolf, etc. This area, which is sometimes grouped as one *animal region*, includes the greater portion of the land surface of the earth. The animals in the extreme north are very much alike; while toward the south they vary more widely.

It is probable that since very early times the great land masses of the earth have been situated in the Northern Hemisphere, and that here the principal types of animal life were developed. There is also evidence that Eurasia had land connection at various times, for longer or shorter periods, with North America on the one hand, and with northern Africa on the other; hence, at these times the animals from the north migrated southward, and vice versa.

A musk-ox.

North American and Eurasian Regions. Northern North America, however, has so many animals that are different from those of northern Europe and Asia that it is usually considered as a region by itself, which we may call the *North American Region*. Among the animals which are found only in this district are the musk-ox, the skunk, the prairie-dog, the wild turkey, and the raccoon.

Among the animals which were once found only in the northern parts of the Old World (which we may call the *Eurasian Region*), are the mole, rat, sheep, goat, and camel. Many of these have been brought to America by the white people and are now widely scattered throughout the Western Hemisphere.

An African lioness.

South American Region. In Central and South America, there are many forms of animals found nowhere else in the world. The true monkeys, the ant-eaters, the armour-covered armadillos, the largest flying bird in the world — the condor, many humming-birds, and the great ostrich-like bird — the rhea, are characteristic of this region, which is known as the *South American Region*. The puma and the jaguar, both great cat-like animals, extend into North America, and the tapir is found both in South America and in south-eastern Asia.

It is thought that very long ago, the animal life of South America was the same as that of North America, to which it was then joined, much as it is at the present time. This region, afterwards, it is believed, became separated from the north for a time, and remained so, long enough to bring about the many differences that now exist between the animal life of the two continents.

Ethiopian Region. South of the Sahara Desert, which is so barren and dry that animals cannot readily migrate across it, is the vast area known as the *Ethiopian Region*. This contains many animals not found elsewhere. The great hippopotamus, living in the rivers and swamps of the hot regions of Africa; the long-necked giraffe; the striped, horse-like zebras, and the smaller quaggas; the ostrich, the largest walking bird in the world; the great man-like gorilla, and the chimpanzee, live in this region only. Here also are found great numbers of antelopes. Many animals of the Ethiopian Region are also common in south-eastern Asia. Among others common to both regions are the lion, the leopard, the panther, the hyena, the elephant, and the rhinoceros. These are frequently seen in our menageries and zoological parks.

A chamois.

Oriental Region. In south-eastern Asia, which lies in the hot belt, and therefore has an abundance of rainfall and vegetation, we find a great number of carnivorous animals, including those already mentioned, and also the tiger, which sometimes ranges far west and north over Asia nearly to the Arctic Circle. This district is known as the *Oriental Region*. The islands close to Asia, including Sumatra, Borneo, and also the Philippines, have animals similar to those of this region.

The cassowary.

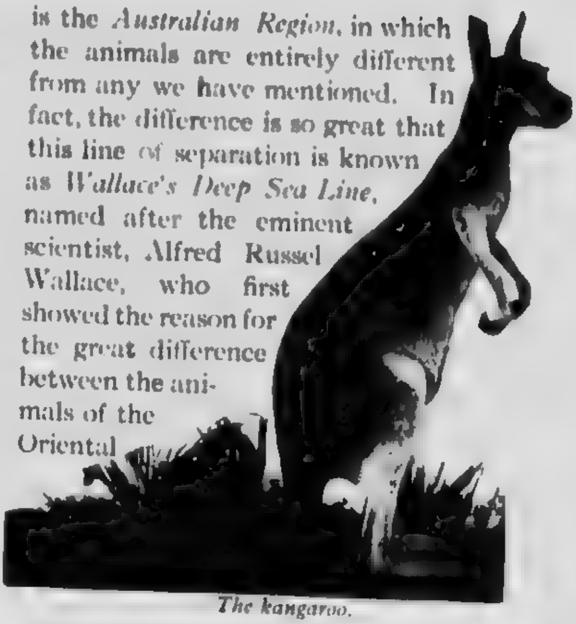
The many resemblances between the animals of the Ethiopian and Oriental regions seem to point to a common origin. Ages ago northern Eurasia had a tropical climate and was inhabited by tropical animals. For some reason a cold period began to develop, and these heat-loving forms were forced to migrate south, some to south-eastern Asia and others to southern Africa. Their return was prevented in the one case by the rise of the Himalayan mountains and in the other by the formation of the Sahara Desert.

Alligators of the southern United States.

The condor, the largest flying bird in the world.

The chimpanzee.

Australian Region. Across a narrow channel of deep water which separates these islands from those of the north coast of Australia is the *Australian Region*, in which the animals are entirely different from any we have mentioned. In fact, the difference is so great that this line of separation is known as *Wallace's Deep Sea Line*, named after the eminent scientist, Alfred Russel Wallace, who first showed the reason for the great difference between the animals of the Oriental Region and those of the Australian Region.


The kangaroo.

In the Australian Region we find no animals like those of any other part of the world except the domesticated forms, such as horses, dogs, sheep, cattle, and rabbits, which have been carried there by white men. The most interesting, perhaps, are the mammals which suckle their young. The mammals of Australia differ from nearly all the others, because they carry their young in a pouch of skin on the underside of the body. The largest of these pouched animals, or *marsupials*, are the kangaroos, which

The striped, horse-like zebras.

can leap rapidly by using their strong hind legs and great tails.

Here also we find animals, like the duck-mole, which are mammals, yet lay eggs. The birds also are peculiar. The largest are the cassowary and the emu, both somewhat like the ostrich. Many of the birds are beautiful, such as the bower-bird which builds a nest of bright-coloured objects, the brilliantly coloured cockatoo, and the lyre-bird whose peculiarly shaped tail gives it its name.

It is supposed that ages ago Australia, like North America and Africa, was connected by land with Eurasia. Life on the earth was at that time mainly of the kangaroo type. Some great land movement isolated Australia from the rest of the world, and it has so remained until the present, and the animals throughout this long time have retained their peculiar and distinctive characteristics.

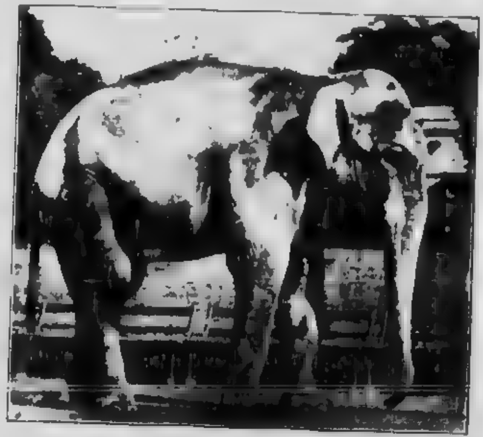
Domestic Animals. Among the animals which are most broadly distributed over the world are those which, like the house dog, have been domesticated, and can live in various climates and whose food man supplies, if it cannot be secured by the animals themselves.

In extremely cold countries where vegetation is lacking, dogs are much used for drawing loads, because they are hardy and the necessary animal food can be readily carried, when it would be impossible to transport enough plant food for horses. The house cat, another very widely distributed animal, is found almost universally in those regions occupied by white peoples.

The double-horned rhinoceros

The hippopotamus

The tiger.



The elephant

The horse lives everywhere except in the tundra and cold deserts, in a part of Australia, and in the equatorial jungles of Africa and South America. Sheep and cattle are distributed over the earth wherever they have proved an advantage to man, and where food can be readily secured for them.

Horses, sheep, cattle, and hogs are the most important of the domestic animals, because the horse is the great draught animal of the world, and the others are the chief food-producing animals. Sheep are also important for their wool, and cattle for their hides.

The camel is the most useful domestic animal in the deserts of southwestern Asia and northern Africa. Its feet are so shaped that they sink very little into the sand and it can go long distances without food or water.

XX. THE PEOPLE OF THE WORLD

Distribution of Mankind. The number of people in the world is estimated at nearly 1,600,000,000. Mankind is distributed very unevenly. The regions of permanent ice on the mountains and about the poles are uninhabited. Deserts contain very few people, except around the oases, and the hot, moist jungles also are practically uninhabited. The largest numbers of people are found in the lowlands near the sea-shore, where the climate is not too severe for outdoor labour the year round, and where there is sufficient moisture to raise the crops necessary for food. The most densely inhabited region of the world, outside of certain small areas in some of the largest cities, is in the low plains of south-eastern Asia.

The most progressive nations live in the coastal portions of the temperate belts, where the summers are not too hot and the winters not too cold, and yet where there is enough contrast between winter and summer to make the climate healthful. In the occupied regions of the hot belt, the people are not so energetic and advanced as they are in the cooler temperate belts. White people cannot live permanently in tropical regions, except where the altitude is high enough to give a cooler and drier climate than is found in the lowlands.

Italian children, dark-skinned Caucasians.

The White Race. The largest number of people belongs to the *Caucasian* (*Indo-European*), or *White Race.* The members of this race have oval faces, small mouths and lips, large narrow noses, and straight eyes. They are the most active, enterprising, and intelligent race in the world; they speak many languages and are divided into many nations. Some people of the Caucasian race are very dark-coloured, so that really two great groups of white people exist — the dark-skinned and the light-skinned.

The light-skinned, such as the British, live in the cooler portions of the temperate belts, while the dark-skinned, such as the Italians, occupy the warmer parts of this belt and the sub-tropical regions.

In the earlier times the white race lived only in the Eastern Hemisphere. From there it has emigrated, until now it is found in all regions where the climate is favourable for progress.

The Yellow Race. The next largest number of people belongs to the *Yellow Race,* which occupies almost all of Asia and northern Europe. This race is sometimes called the *Mongolian Race,* named for Mongolia, in China. One branch of this race, inhabiting south-eastern Asia, is sometimes called the *Brown Race,* because of its deeper colour. The people of the yellow race are of smaller stature than those of the white race, and have coarse, black hair, small noses, and small, black eyes, with the outer corners a little elevated. They include some of the most backward tribes of the world and, as a rule, are not progressive. The Japanese, Chinese, Eskimos, and Laplanders, all belong to the yellow race. The Japanese are exceptional in character, being both progressive and enterprising.

The Red Race. The third great race is the *American Indian*, or *Red Race*, sometimes considered as belonging to the yellow race.

The red race is found only in America, and it includes all the native peoples of the Western Hemisphere except the Eskimos. The people of the red race have a yellowish, copper-coloured skin, long, coarse, black hair, small, round eyes, and are of about the same stature as the white race. Most of the red race are but little civilized, although a few are beginning to develop industries, such as basketry, pottery, and a little farming, which will furnish products of value to the rest of the world.

Children of Burma who belong to the Brown Race

The Black Race. The fourth and last great group of people is the ***Black***, or *Negro Race*. Their native home is in the tropical region of Africa, and in Australia and the neighbouring islands. Negroes were formerly brought to America as slaves, and now are found in the warmer portions of North and South America in great numbers.

The negroes that we know in this country have a dark brown or black skin, short, black, kinky hair, very broad, flat noses, large, round eyes, large teeth and thick lips, and are of about the same stature as white people. As a race they are somewhat indolent, like other peoples whose homes are in tropical countries. They are often impulsive in their actions, but they are faithful and affectionate to any one for whom they care.

In Central Africa, in certain parts of southern Africa, and in a few of the islands of the world are the *Negritos*, who are like the negroes in many ways, but are much shorter in stature. These people are found only in their native homes. The natives of Australia belonging to the negro race are the lowest and the least civilized people of the world. They live almost entirely on the food to be obtained from the wild animals and the plants about them.

A Japanese girl.

XXI. THE PEOPLE OF THE WORLD

(Continued)

Savage People. Everywhere people must in some way secure food, clothing, and shelter, but the manner of procuring these necessaries differs among different races, and even among different divisions of the same race.

The most primitive people are those who get their living entirely by hunting and fishing, or by digging edible roots, or by gathering the fruit of plants that grow about them. These people we call *savage*. There is no division of labour among them; every man seeks the necessaries of life for his family without reference to others. Usually, however, the men are the hunters, while the women gather the roots and carry the burdens. Their homes are extremely simple, and many of these people have no fixed place of abode.

These hunting and fishing races are found only in small numbers in a place, because a large area is needed to furnish the necessary food for a few people. In the colder regions they dress in skins, but, in the warmer regions, they have little need of clothing. Their implements are simple, and consist chiefly of cooking utensils, spears, clubs, and other hunting tools. Some of them do not even have the simple bow and arrow.

Australian negro children.

Barbarous People. Those people who carry on grazing or primitive agriculture, that is, cultivate in a rudimentary way small plots of land or follow flocks and herds about the country, are called *barbarians*, and are more advanced than savages. People who live by their herds and wander from place to place are called *nomads*.

Some nomads, for example, the Arabs of Asia and Africa, live in villages, each of which is made up of a few families. These people carry on agriculture in a simple way, have developed certain industries, and have tools to help them in their work. Even among these people, however, there is little division of labour, except between the men and the women. Each family or tribe secures for itself all that it needs to sustain life.

Civilized People. The highest group is that known as *civilized*. Among civilized people many varied industries are followed, and, as a rule, each worker devotes his attention to some one particular thing, with a view to exchanging or trading the surplus products for other things which he needs or desires, and which other people, for some reason, can produce better or cheaper than he can. The larger number of the civilized people of the world live in the country. They are engaged chiefly in agriculture, grazing, mining, or lumbering, — occupations which cannot be carried on in densely populated regions. These people live mostly in permanent houses, although in grazing, and, to some extent, in lumbering, men leave their homes for many months in the year.

Industries of Civilized People. The condition of a country as to surface, soil, climate, coast waters, etc., usually determines the chief occupations of its people. Thus, if the district has a fertile soil and a suitable climate, *agriculture* will form a large part of the industries of the region. If there are valuable forests, it is likely that many people will be engaged in cutting down the trees, getting the logs to a convenient place for sawing them into boards and sending them to other parts of the country, or to other countries which need a supply of lumber, and *lumbering* will be the chief industry. If the district is rich in mineral deposits of coal, silver, iron, or other valuable ore, people will be employed in working mines, and the chief occupation will be *mining*. If the coast waters are teeming with fish, valuable for food, then many people will find employment in catching and curing fish and sending them to market, hence, *fishing* will be an important industry. If the region is rich in fur-bearing animals, such as the beaver, otter, or fox, *hunting* will be a favourite employment, especially for those fond of adventure.

Tunguses of Siberia.

The changing of raw materials into useful articles, such as lumber into furniture; iron and steel into machinery; cotton or wool into cloth, etc., gives employment to many persons. Hence, *manufacturing* centres become important in the development of a country.

Commerce and Trade. The people engaged in the different industries mentioned produce articles for use or exchange. The buying, the selling, and the transporting of goods from one part of the world to another is known as *commerce* and *trade*.

The simplest form of commerce, which is known as *barter*, is the exchange of one article directly for another. This is seen sometimes in small country stores where the farmer takes his products and exchanges them for the goods he desires. Years ago the miner *bartered*, when he traded at the store the nugget of gold he had dug from the earth. A hunter or trapper often brings in skins to exchange for food and other things he needs.

In most commercial transactions, however, *money* is used. Money is usually made from some valuable metal that will not readily wear out, and that can be exchanged for anything else. In commerce, therefore, a man exchanges the products he has to sell for money, and with this money buys other things at his convenience.

Transportation. In early times local commerce on land was carried on almost entirely by means of caravans of camels or horses. The cost of transportation was so great that, of course, only the richest and most valuable products could be transported in this way. People living close to a great sea like the Mediterranean early learned navigation, and thus ship commerce developed.

A large part of the trade of the world is now carried on over the oceans. Formerly, large bodies of water were a hindrance to commerce, because they interrupted land transportation. Now, in many places, the land is a hindrance to commerce, because it interrupts water transportation which, for long distances, is much cheaper than transportation by land.

Indian children of North America with their decorated dress.

To overcome land obstructions and to provide continuous highways of water along lines of valuable trade, canals are built. Thus, the Suez Canal provides a continuous water-way from Great Britain to India and shortens the distance 5,000 miles.

Loading a camel caravan.

Water commerce is also carried on along the navigable rivers, between different places on the coasts of a country, and along canals which have been built to connect navigable rivers or lakes, as for example, along the Welland Canal.

Land Commerce. Land commerce is now conducted largely by means of railways, although in some of the more rugged and thinly inhabited portions of the earth, goods are still transported by caravans, by wagons, by pack animals, and, in some places, even on men's backs. Certain commodities, like oil and gas, are transported from place to place through great pipes that have been laid underground for many miles.

Methods of Communication. With the development of commerce, quicker communication between one part of the world and another has become necessary. The most common means of communication between people who want to engage in business is by letters carried from place to place by the mails. When the greatest haste is desired, messages are also sent by means of the telegraph or the telephone.

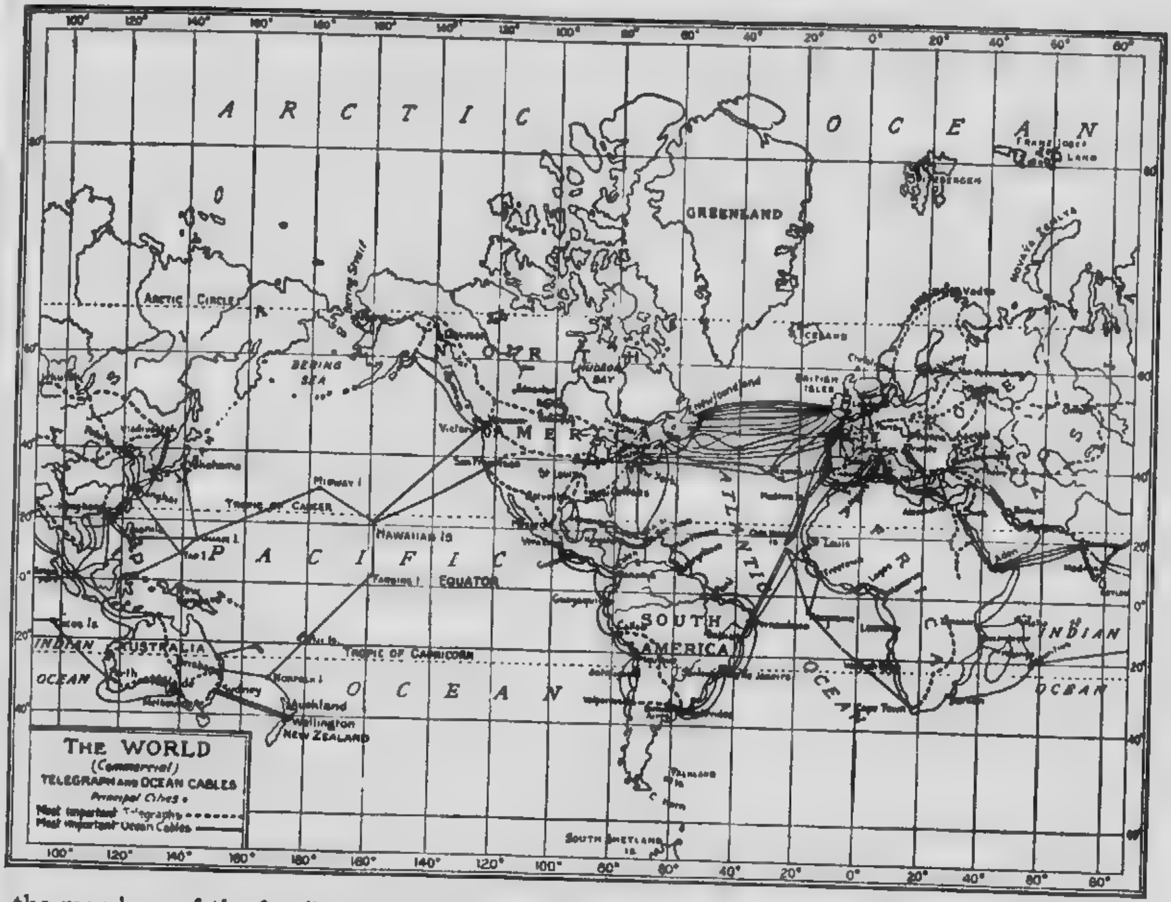
Telegraph cables across the Atlantic Ocean have been in use since 1866, and in the year 1903 two cables were completed across the Pacific Ocean. Now, all the great countries of the world are connected with one another by telegraph.

The latest invention for rapid communication between places is known as wireless telegraphy, by means of which messages are sent through the air to places many hundreds of miles away.

Government. The successful development of any community depends largely upon whether people regard the rights of their neighbours, or whether they try to live for themselves alone. In every group of people some form of government is necessary, because there are always some individuals who will not do as they should unless they are made to do so. Government has arisen also because there are many things which every one in a community needs, but which a few people attend to better and more cheaply for the community, as a whole. The Post-Office Department and the Lighthouse Service are perhaps the best illustrations of conveniences that can be provided for by the government better than by each person for himself.

A reindeer sledge, a means of transportation in cold countries.

Forms of Government; the Home. The simplest form of government is that of the *home*, in which the parents establish certain rules which must be obeyed in order that all



the members of the family may live together in comfort and happiness.

The Village, Town, or City. The next largest form of government is the *village*, *town*, or *city*, which includes many homes and the lands surrounding them. In such a group some central form of government is necessary in order that one family may not interfere with the peace or comfort of the whole community, and in order that conveniences, like streets and schools, which are of use to all, may be properly cared for.

In the villages of primitive peoples, some one man, known as the *chief*, establishes the laws to be obeyed by all, and settles troubles between individuals. Among most civilized peoples, the persons to make and execute the laws are elected by the people. These persons act in the name of the community in establishing laws and in carrying on business which affects the whole community.

The State. Just as a village, town, or city includes all the families living therein, so the highest form of government, the *state*, or the *nation*, is made up of all the communities within its territory. Among some nations the rulers, until recently, held absolute power. They made the laws and enforced them, and also held office for life by right of birth. A nation thus ruled is an *absolute monarchy*. The rulers, or monarchs, took such names as *Czar*, in Russia; *Shah*, in Persia; *Sultan*, in Turkey. Absolute monarchies are gradually passing away.

A government, in which the ruler holds office by right of birth, but is limited in power, is called a *limited monarchy*. Such a ruler is commonly called a *king*, or *queen*, as in Great Britain; *emperor*, or *empress*, as in Germany.

A national government, in which the people elect their own ruler from among their own citizens, is a *republic*, as in the United States.

A dam across a river, to turn the water into the Canal, shown alongside.

Relation of Geography to Government. The need for some form of government has arisen everywhere because the geographical conditions have made it possible and advantageous for people to live in groups. The form of government, however, is not determined directly by geographical considerations, because it has been devised by men and not determined in its features by the physical conditions to be found in any region.

XXII. HOW MAN CHANGES THE GEOGRAPHY OF THE WORLD

Man is continually changing the geography of the world in many ways. His clearing the country and cultivating the soil changes even the climatic conditions, and he has learned to occupy many regions in spite of the climate. The white man can endure the cold of the polar regions, if he builds comfortable houses and wears furs and thick clothing. He is constantly learning better how to live in the unhealthful tropical countries, but in all cases he lives in spite of the climate, and not because he has changed it in any way.

How Man Changes the Distribution of Water. Man modifies the distribution of water over the world in many ways. Water bodies he connects by means of canals, and the water from rivers and lakes he uses to irrigate his fields. By building dams, lakes are sometimes made to store up water, so that it may be used for irrigation or for power. Swamps and lakes are drained, so that the land can be utilized for agriculture. The mouths of rivers and estuaries are kept from filling or silting up by making the water pass through narrow channels, so that the river detritus is carried far out to sea, as in the case of the Mississippi River. The shores of lakes and oceans, particularly about harbours, are changed either by filling up the shallow water so as to make more land, or by deepening the water so as to make a larger harbour.

How Man Changes the Form of the Land. Man also changes the form of the land in many ways. He increases the amount of land in the way we have mentioned above, but oftentimes he levels hills into plains. In other places he keeps the water from wearing into the river banks or hillsides, and thus preserves the land. Sometimes he turns rivers from their natural course in order to build a railway or a canal, and, in large old river valleys, he builds levees to keep the water from flooding the lowlands.

How Man Changes the Distribution of Plants and Animals. Geographically, the greatest effect of man is seen in the distribution of animals and plants. The domesticated animals have been carried into remote parts of the world, and food plants have been made to grow wherever the climate and soil conditions permit. Unfortunately, too, man has also extended the distribution of many plants and animals that are harmful rather than helpful. The seeds of weeds have been carried in grains and have run riot in new countries. Rats, mice, and vermin have been unconsciously carried by people, as they have migrated into a new region.

Sometimes animals, transported for the sake of their helpfulness, have become nuisances, because they have developed so rapidly in the new country. In this way Australia has been overrun by rabbits, until now costly efforts have to be made by the government to exterminate them. The gypsy-moth, brought into the United States with the silk-worm, is now devastating the forests of the eastern part of the country, in spite of all that people can do.

XXIII. THE HEAVENS

The Heavens appear to us like a great vault or dome studded with innumerable brilliant objects called *stars*. If observed carefully, these will be seen to rise in the east, pass overhead, and set in the west. To observers north of the equator, some stars never pass out of view, but move in a circular path about a fixed point in the heavens. These are called *circumpolar stars*, and this fixed point is the *North Pole* of the heavens. This point is close to Polaris, or the Pole-star, which may be easily found, as it is always in line with two of the seven stars in the circumpolar group known as the Great Bear. To persons living some distance south of the equator, the Southern Cross may be seen to circle in a similar way about the *South Pole* of the heavens. To persons at the equator, all stars seem to pass below the horizon. All of these stars maintain the same relative positions to one another and to the earth, and are known as fixed stars. They only *seem* to rise and set; the real cause of their apparent motion is the rotation of the earth from west to east about its axis every 24 hours, which gives the stars the appearance of going in the opposite direction, or from east to west.

A few of these star-like objects, however, while they seem to rise and set like the fixed stars, may be observed to change their positions, not only with respect to the fixed stars, but also with respect to one another. These are called *planets*, and some of them have been known from very early times.

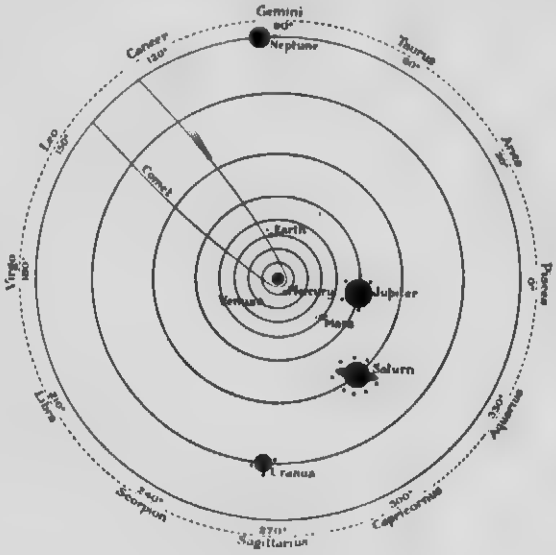
In addition to changing their places in the heavens, the planets differ from the fixed stars in being more brilliant and also in appearing much larger, when observed through a telescope; while the fixed stars, when so observed, appear a little brighter, but no larger, remaining mere points of light.

The fixed stars are believed to be suns similar to our sun, but they are at such immense distances from us that they appear as mere points of light. Light travels at the tremendous rate of 186,000 miles in one second. It reaches us from the sun in eight minutes, but from the nearest fixed star it requires over four years to reach the earth. We see the pole-star by the light which left that body over thirty years ago. If every star should now suddenly cease to shine we should not be aware of the fact, as far as our own sense of sight is concerned, for years, and in many cases, centuries to come. Stars are classified according to their brightness into those of first magnitude, second magnitude, etc. There are only twenty large enough to be placed in the first class. Sirius, the dog-star, is the brightest of all. Not more than 6,000 stars can be seen by the unaided eye and none of these is beyond the sixth magnitude; but the telescope, aided by photography, gives us reason to believe in the existence of about 100,000,000 stars, and it is probable that many, if not all, of these have planetary bodies revolving about them. If so, the human mind cannot conceive the immensity of the universe.

Constellations. The ancients grouped the fixed stars into clusters called constellations and gave each cluster a name, usually from some fancied resemblance to an animal or some mythological character; hence, such names as Ursa Major, Orion, etc.

The Solar System. Our earth is only one of several bodies which together form the *solar system*. This system is isolated in space and at inconceivable distances from the fixed stars. In the centre is the sun, a fixed star, which seems much larger than the other fixed stars, because it is so much nearer. The second class of bodies is that of the *planets*, of which eight are known: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune

The third class is that of the *satellites*, of which our moon is an example. The satellites revolve about the planets. Some planets have several moons. A fourth group is that of the *asteriods* — small planets, four or five hundred in number whose orbits lie between those of Mars and Jupiter — and a fifth group consists of irregular bodies, the comets and meteors which move in a manner different from that of the other members of the solar system.



The Solar System.

The Sun. The sun is the central and largest member of the solar system. It is the source of all our light and heat. It is about 93,000,000 miles distant from the earth; while the distance from the earth to the nearest fixed star is 25,000,000,000,000 miles. The diameter of the sun is about 110 times that of the earth, but its density is about one fourth. Its force of gravity is such that a body on its surface would weigh 28 times as much as on the earth's surface. By the use of an instrument called the spectroscope, it has been shown that about one half of the elements found in the earth are present in the sun, mostly as gases.

The sun is so far away that we know very little about it, but by the use of the telescope three quite different facts may be made out. The white radiant surface of the sun as seen by the unaided eye is called the *photosphere* (light sphere). It is the densest portion and gives out the light and the heat. Above the photosphere is the *chromosphere*, a reddish envelope of no great thickness, best seen during a total eclipse. It consists mainly of glowing hydrogen gas. Outside of the chromosphere is the *corona* or crown. This is seen only during a total eclipse, and takes on the appearance of a bright halo of soft light surrounding the sun and filling a space more than twenty times as large as the sun itself. It is probably composed of exceedingly minute particles thrown off with sufficient velocity to carry them millions of miles from the sun's photosphere.

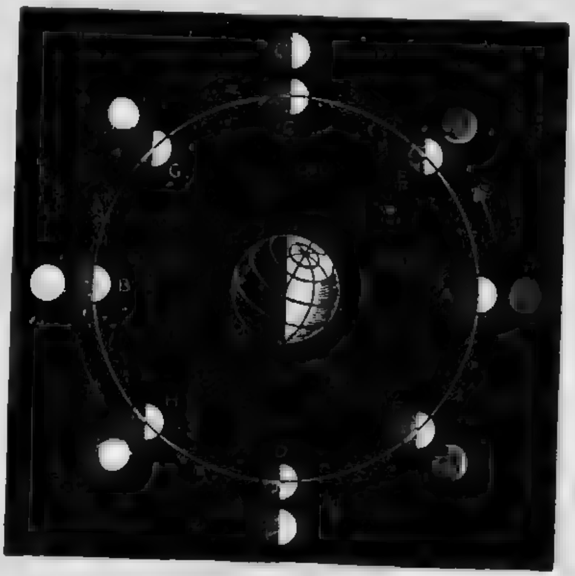
Sun Spots. Great chasms or rents, known as sun spots, appear from time to time in the sun's photosphere, and move across its face until they disappear on the opposite side, being carried by the rotation of the sun. They often have a diameter of many thousands of miles and have periods of great activity followed by intervals in which they almost entirely disappear. They are thought to have an effect on the earth's atmosphere.

The sun has two motions. It rotates on its axis in about 25 days, but not as a rigid body like our earth. Its second motion is as part of the Solar System. The exact nature of this motion is not known, but the whole system is moving through space with tremendous velocity toward the constellation Hercules.

The Moon. The moon accompanies the earth in its journey round the sun, both bodies whirling about their common centre of gravity, which is situated about 1,200 miles within the earth's mass. Though about 240,000 miles away, it is by far the nearest heavenly body to the earth. This is why it seems almost as large as the sun, though only 2,160 miles in diameter. The force of gravity at its surface is only one sixth of that at the earth's surface, so that a boy on the moon could throw a stone six times higher than he could on the earth.

Revolution of the Moon. The reason the moon rises a little farther to the east every evening is that it is making a journey about the earth, which it completes in about 29½ days. Its orbit is in the form of an ellipse. When farthest from the earth it is said to be in *apogee*, and when nearest in *perigee*.

Rotation of the Moon. The most careless observer must have noticed that the "man in the moon" always wears the same expression. One side of the moon is always turned toward us and the other side is never seen from the earth. This is due to the fact that the moon rotates on its axis in the same time and in the same direction as it revolves round the earth. The length of a lunar day is therefore equal to 29½ of our days, and, hence, at the moon's equator the sun shines constantly for nearly 15 days and is absent an equal length of time. Under these conditions, the surface of the moon is heated to a high temperature during the long day, and cooled to a very low temperature during the long night.

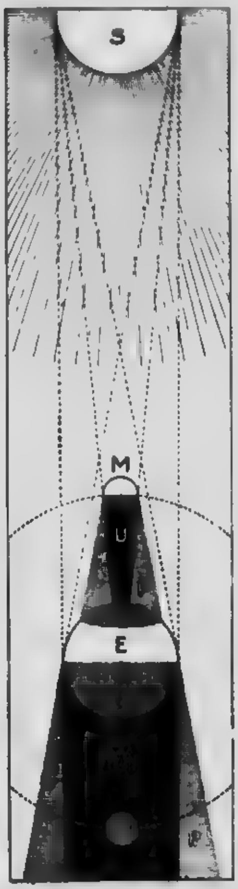


Phases of the moon.

When the moon passes between the earth and a star, the star disappears instantly, and as there is an entire absence of clouds of any kind, the moon can have no atmosphere. If there is no atmosphere, there can be no water on its surface, as water would evaporate and produce an atmosphere of water vapour. Astronomers have carefully studied the surface of the moon, and have mapped it out with considerable accuracy. To the eye, the surface presents dark and light patches of various shapes. The telescope reveals the former as great plains or dried-up sea bottoms, and the latter as mountains which reflect the sun's light, and thus appear brighter by contrast than the plains, which are somewhat in the shadow. But the most notable physical feature of the moon's surface is the great number of crater-like mountains which resemble somewhat the volcanoes on the earth's surface, excepting that many of them are of immense size.

Phases of the Moon. As the moon goes round the earth, it is seen at one time as a crescent; at another, as a half-moon; at another, as a full moon; and so on. These are called the moon's *phases*. One half of the moon is always lighted up by the sun; but from the earth we cannot at all times see all of the lighted half, hence the different appearances of the lighted portion. In the illustration the sun is supposed to shine from the right. The inside circle of half lighted spheres represents the moon as it would appear from the sun. The outside circle represents the moon as seen from the earth. At A the moon is nearly between the earth and the sun, and we have "new moon." At E the lighted portion as seen from the earth shows a "crescent moon." At C the moon is in its first quarter. At G three fourths of the lighted part is visible, and at B the entire lighted half is visible, and we have "full moon." Continuing its course, the same phases are repeated in reverse order, and the moon is said to wane. The horns of the crescent moon are always turned away from the sun. In the crescent phase we sometimes see the rest of the moon, dimly lighted. This is due to that portion of the moon reflecting the light it receives from the earth.

Eclipse. If the moon's orbit lay in the plane of the earth's orbit (*the ecliptic*), the moon would pass between the earth and the sun once every month, and two weeks later the earth would shut the sunlight away from the moon. In other words, at every new moon there would be an eclipse of the sun and at every full moon an eclipse of the moon. The reason this does not happen is that the moon's orbit is inclined at an angle of about five degrees to the plane of the earth's orbit, and it is only when the moon is on or near the points called nodes, where the moon's orbit intersects the ecliptic, that an eclipse can occur.



Eclipse.

An eclipse of the moon may be partial or total. An eclipse of the sun may also be partial or total, and in addition, if the moon is in apogee and the sun in perigee, the moon's disc appears too small to cover the whole of the sun, and an eclipse then is said to be annular or ring-like, the black disc of the moon appearing in the sun's centre with a ring of the sun around it.

Planets. The planets all revolve about the sun in the same direction, in paths almost circular. These paths are called their orbits. When nearest the sun they are said to be in *perihelion*, and when farthest away, in *aphelion*. The plane in which the earth's orbit lies is called the *ecliptic*. The planes in which the orbits of other planets lie are all near the ecliptic, some above and some below. The belt in the heavens including all of them is called the *Zodiac*. This is about 16 degrees wide, 8 degrees on each side of the ecliptic. It is subdivided into twelve equal spaces, in each of which lies a constellation, known as one of the signs of the Zodiac. Hence we say a certain planet is in Libra or in Capricorn, etc.

Mercury, the smallest of the planets, is nearest the sun. It rotates on its axis in the same time as it revolves about the sun, toward which one side of the planet is always turned.

Venus. This planet is about the same size as our earth. It has a dense atmosphere, which reflects the sunlight to such an extent as to make Venus the most brilliant of the planets. Both Venus and Mercury present phases similar to those of our moon.

Mars. After the earth, which has next place in the Solar System, comes Mars. At certain times Mars is comparatively near us, and may then be studied more minutely than any of the other planets Its year is about twice the length of ours. The atmosphere is very clear, and it seems to have winter and summer seasons. Certain markings on its surfaces were once supposed to be canals. Mars has two moons.

Jupiter. This planet is larger than all of the others combined. It is 1,300 times the size of the earth, and probably on account of its rapid rotation, is much flattened at the poles. The surface of the planet cannot be seen on account of the dense atmosphere which is supposed to be due to its heated condition. Eight moons revolve about Jupiter.

Saturn. This planet is next to Jupiter in size. It is much compressed at the poles and resembles Jupiter in many respects. Its most remarkable feature is its system of rings, which are supposed to be swarms of small satellites revolving in orbits not far removed from one another and reflecting light like the planet itself. In addition the planet is accompanied by ten moons.

Uranus and Neptune. These two planets were not known to the ancients and they are so far away that not much is yet known of their condition. They have dense atmospheres quite unlike that of the earth. The discovery of Neptune in 1846 is a remarkable proof of the accuracy of the law of gravitation. The existence of this planet was predicted by mathematical calculation on account of certain irregularities in the movement of Uranus. The following table gives other facts relating to the planets

Name	Diameter in miles	Distance from Sun	Time of Revolu'n Length of year	Time of Rotation Length of day	Number o Satellites
Mercury....	3,030	36,000,000	88 d	88 d	0
Venus.....	7,700	67,000,000	225 d	225 d	0
Earth.. ...	7,927	92,900,000	365¼ d	24 h	1
Mars.......	4,230	141,000,000	687 d	24½ h	2
Jupiter.....	88,300	483,000,000	12 y	10 h	8
Saturn.....	75,700	886,000,000	29½ y	10¼ h	10
Uranus.....	32,000	1,781,000,000	84 y	.....	4
Neptune ...	35,000	2 791,000,000	165 y	.....	1

Comets and Meteors. Besides the regular members of the Solar System, there are certain bodies which appear suddenly in the heavens, shine for a time, and then disappear in some cases never to return, and in others to come back after intervals varying from a few years to many centuries. These are known as *comets* and *meteors*.

Comets are luminous bodies believed to be made up of minute meteoric particles. The brightest and densest part is called the head, and the flowing train that usually extends away from it, and which may be millions of miles in length, is known as the tail. Some comets circle round the sun in such orbits that they are probably carried away from the Solar System for ever; others have elliptical orbits, and the time of their return can be calculated and is looked forward to with great interest. Their density is so slight that stars seen through them lose nothing of their lustre. The earth has been known to dash through the tail of a comet, the only result of the collision being a fine shower of "shooting stars."

Meteors.

Meteors. Attentive observers may see a few meteors, or "falling stars" on any clear night. A star apparently leaves its place in the heavens, passes swiftly through the atmosphere for a second, followed by a tail of light, and then "goes out." At certain times showers of "shooting stars" are seen. That they are not real stars falling is evident from the fact that the stars are as numerous after a meteor shower as before. They are small solid bodies, which, attracted from their course by the earth, enter its atmosphere with enormous velocity and are converted into dust by the heat produced by friction with the atmosphere. It is the heat which renders the dust luminous.

Meteorites. Occasionally meteors are of such a size that they reach the earth before being entirely changed into vapour. These *meteorites*, as they are called, are in some cases made up of metallic matter, chiefly iron and nickel, and in others of volcanic rock. If it were not for the atmosphere, millions of these would bombard the earth.

The Nebular Theory. The Solar System is accounted for on the supposition that at one time in the remote past it consisted of a vast *nebula*, or cloud of heated gas-matter extending beyond the orbit of the most distant planet. As the nebula cooled and contracted, it acquired a whirling motion, and threw off rings, which formed the planets, and in time these also threw off smaller rings which formed the satellites. The central portion of the original nebula remained as the sun. The physical condition of each planet depends in a measure on the depth to which it has cooled. Jupiter is probably still very hot. The earth gives out little heat; the moon is completely cooled. This explanation of the origin of the Solar System is known as the *Nebular Theory* of Laplace, the astronomer who proposed it. There are other theories to account for the system, but Laplace's is the one most generally accepted.

GEOGRAPHY OF THE CONTINENTS

PART II

NORTH AMERICA

XXIV. THE CONTINENT AS A WHOLE

Size and Position. North America is third in size of all the continents, has more than twice the area of Europe, and contains about one twentieth of the land surface and one fifteenth of the population of the world. In latitude it extends over 62 degrees, or nearly 4,300 miles, north to south.

North America.

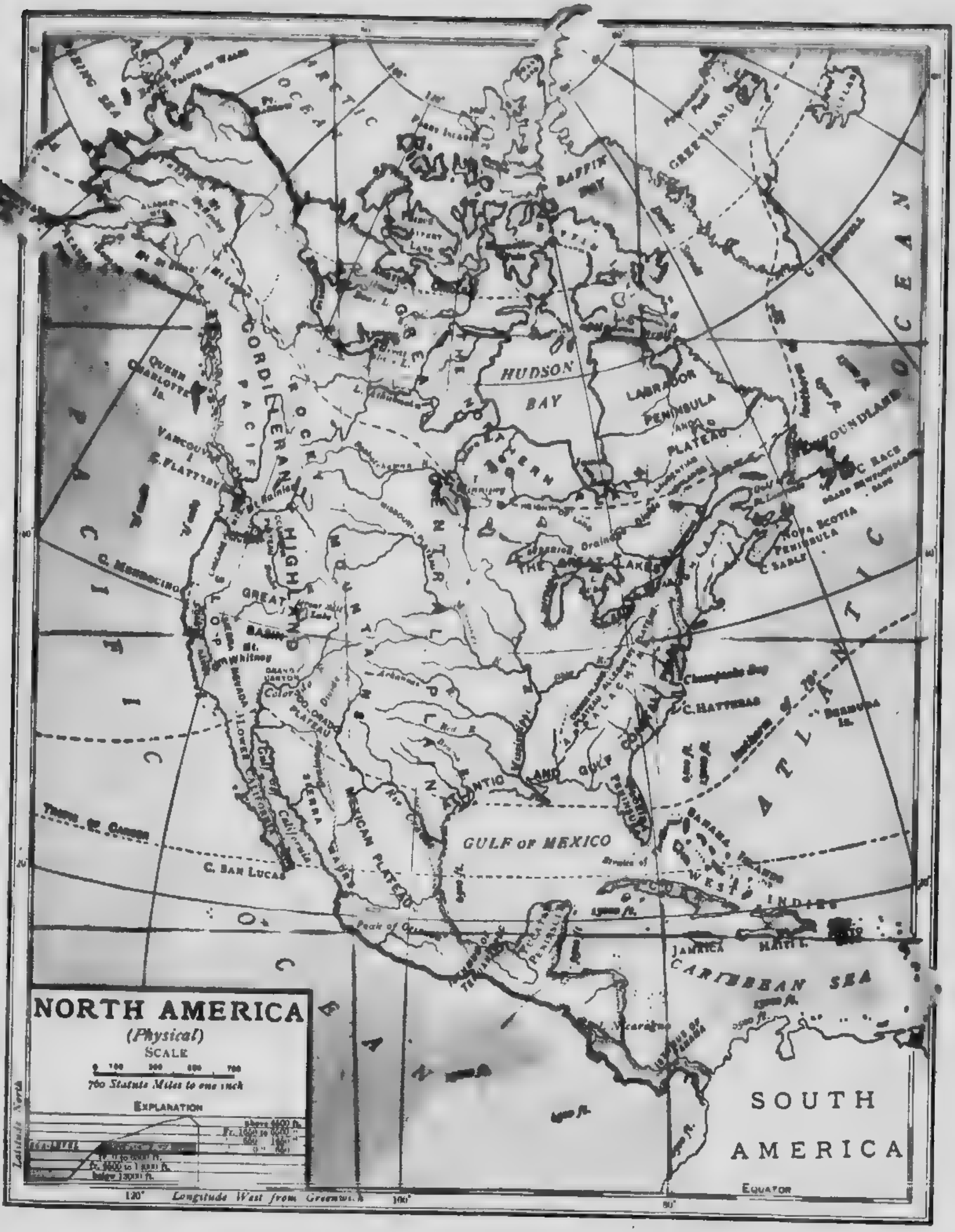
In the higher latitudes, North America lies close to the Old World, approaching it most closely on the north-west, where Bering Strait separates the land masses of Asia and North America by only thirty-six miles.

North America includes the great countries of *Canada*, the *United States*, and *Mexico;* the several small divisions of *Central America;* the many islands of the Caribbean Sea, known as the *West Indies;* and the islands of *Newfoundland* and *Greenland.*

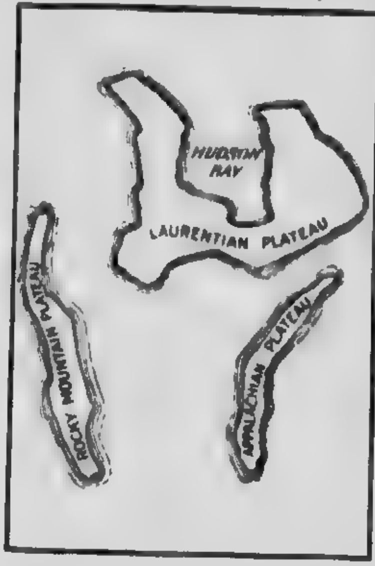
Coast-Line. The coast-line of North America is very long, and is greater in proportion to the land area than that of any other continent except Europe. The most important large indentations are the *Gulf of Mexico,* on the south, and *Hudson Bay,* on the north. The Gulf of Mexico, from its position in the warmer portion of the continent, is extremely important commercially; while Hudson Bay, surrounded by a country as yet only partly explored, and icebound for several months each year, is little used for purposes of trade.

The Western Coast. The northern portion of the western coast of North America is extremely irregular, and abounds in inlets and sounds. These form excellent harbours, as at *Prince Rupert* and *Vancouver.* It is also skirted by a series of offshore islands of continental origin similar to those bordering on Norway. Southward from the Strait of *Juan de Fuca* the coast is almost unbroken except for the small inlets of *San Francisco Bay* and *San Pedro*, and the *Gulf of California;* hence, the number of good harbours is small. These are centred about *Puget Sound* and San Francisco Bay, where navigable rivers break through the high wall of the Coast Ranges.

The Eastern and Southern Coasts. The eastern coast of North America north of New York City is extremely irregular and has many harbours ranging in size from those of *New York*

NORTH AMERICA
(Physical)
SCALE
0 100 300 500 700
700 Statute Miles to one inch
EXPLANATION
above 6000 ft.
Ft. 1000 to 6000 "
below 12000 ft.
Latitude North
120°
Longitude West from Greenwich
100°
80°
EQUATOR
ARCTIC OCEAN
BERING SEA
GREENLAND
BAFFIN BAY
HUDSON BAY
LABRADOR PENINSULA AND PLATEAU
NEWFOUNDLAND
GRAND NEWFOUNDLAND BANK
C. RACE
C. FAREWELL
NOVA SCOTIA PENINSULA
C. SABLE
QUEEN CHARLOTTE Is.
VANCOUVER I.
C. FLATTERY
C. MENDOCINO
CORDILLERAN HIGHLAND
PACIFIC
ROCKY MOUNTAINS
GREAT BASIN
Mt. Whitney
GRAND CANYON
COLORADO PLATEAU
Great Salt Lake
Gulf of California
LOWER CALIFORNIA
C. SAN LUCAS
Tropic of Cancer
MEXICAN PLATEAU
CENTRAL PLAIN
GREAT LAKES
APPALACHIAN HIGHLANDS
Chesapeake Bay
C. HATTERAS
ATLANTIC AND GULF COASTAL PLAIN
GULF OF MEXICO
BERMUDA Is.
BAHAMA ISLANDS
WEST INDIES
JAMAICA
HAITI I.
CARIBBEAN SEA
YUCATAN PENINSULA
Isthmus of Panama
SOUTH AMERICA
PACIFIC OCEAN
ATLANTIC OCEAN

and *Halifax* to fishing havens just large enough to accommodate a few small fishing-vessels.



The beginning of North America.

South of New York the coast-line is extremely regular, and is broken only at intervals by the occasional indentation of an estuary like that of *Delaware Bay* or *Chesapeake Bay*, and by many small breaks in the coast bars. These two estuaries, together with the mouth of the *Mississippi*, are the main outlets for commerce in this region.

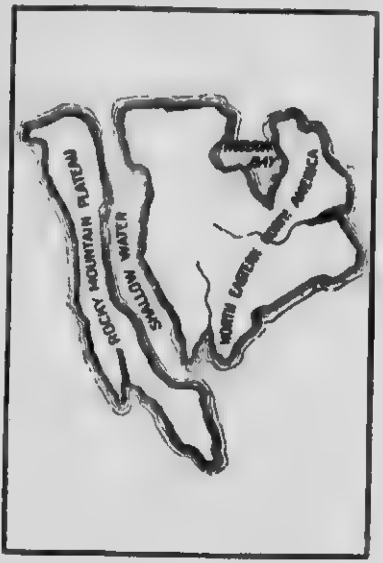
A large part of the southern Atlantic shore is bordered by a series of barrier beaches, separated from the mainland by lagoons. Some of these beaches extend out into the ocean as long capes; e. g., *Cape Hatteras*, or as submerged spits.

Bordering the eastern shore, there is a broad, continental shelf. Off New York, for instance, one shelf extends more than one hundred and fifty miles. The shallowest water of this shelf is in the vicinity of Newfoundland, where the *shoals* or *banks*, as they are called, abound in valuable fish. They form the chief centre of the fishing industry of Canada and the United States.

Surface. The surface of North America consists mainly of two vast highlands, extending in a general north-south direction, and of two broad lowlands. The great *Rocky Mountain* or *Western Highland* borders the western coast from the Aleutian Islands to Panama. Lower and less rugged than the Rocky Mountain Highland is the *Appalachian Highland*, which runs nearly parallel with the Atlantic Coast from New Brunswick to Alabama. Between the Appalachian Highland and the Atlantic Ocean is the low-lying *Atlantic Coastal Plain*, which begins in New Brunswick and extends southwestward into northern Mexico. Between the two highlands, and extending from the Arctic Ocean to northern Mexico, is the *Great Central Plain*,—a vast tract of land, low in the east and rising in the west to m the foot-hills of the Rocky Mountain H land.

The Beginning of North America. When, ov to the wrinkling of the earth's crust, the k began to rise above the water, the first p of the continent of North America to app was the north-eastern part. This was followed by the Appalachian Plateau and later by the Rocky Mountain Plateau. Between these mountain masses lay a great stretch of shallow water. Owing to the weathering influence of heat and cold, rain and snow, these highlands were gradually worn down. The Laurentian Plateau thus supplied the greater part of the clay and sand that now forms the central plain of the continent.

The Rocky Mountain Highland. The Rocky Mountain Highland begins in Alaska and extends southward to the Isthmus of Panama. In the north it is narrow and does not seriously impede travel between the coast and the interior of Alaska. The highland grows broader to the south, being about 400 miles across in British Columbia, and reaches its greatest breadth between Colorado and northern California. Hence in this region it is an important barrier to trade and travel, not only because of its height and breadth, but also because it deprives the westerly winds of their moisture and leaves the plains to the east rainless and parched.



The growth of North America.

The Rocky Mountain Highland is made up of many different mountain ranges, the *Rocky Mountains* proper in the east, the Selkirk, Purcell, Columbia and Cariboo mountains in British Columbia, often referred to collectively as the *Gold Ranges*; the *Sierra Nevada* and the [illegible]*le Mountains* in the United States; and [illegible]*t Ranges* in the extreme west along [illegible]c Ocean. In British Columbia these ranges inclose within their borders the [illegible]*lateau*, a region of an average elevation [illegible],500 feet and 100 miles wide by 500 [illegible]ng from north to south; and in the [illegible] States, two great plateaus — the *Colum*-[illegible]*lateau* and the *Colorado Plateau* — and an [illegible]sive area of interior drainage commonly [illegible]own as the *Great Basin*.

The Rocky Mountains. In Canada the Rock[illegible] Mountains rise abruptly from the eastern pla[illegible] They are broken here and there by a few [illegible] valleys, so that it is possible for railways [illegible] built through them. The most important passes are the *Crowsnest*, the *Kicking Horse*, the *Yellowhead*, the *Pine River*, and the *Peace River* passes.

The northern extension of the Rocky Mountains includes *Mount McKinley*, the highest peak in North America, with an altitude of more than 20,000 feet. Nearer the coast are two other great peaks, which are nearly as high, *Mount Logan* and *Mount St. Elias*.

The Three Sisters, famous peaks in Alberta.

The highest altitudes of the Rocky Mountains in the United States are in Colorado and New Mexico, where there are many peaks exceeding 14,000 feet in altitude. There are few passes across this range in the United States, and these are much higher than those in Canada.

Coast Ranges and Sierra Nevada. To the west of the Interior Plateau in British Columbia rise the Coast Ranges. Their average width is about 100 miles. They have lofty peaks 6,000, 7,000, and some over 9,000 feet high. Toward the north there are many large glaciers. This range robs the winds from the Pacific of their moisture and causes the heavy rainfall of the Coast region, which in places is as great as 120 inches annually. The rugged mountains themselves are generally covered with dense forests, especially on the western slopes.

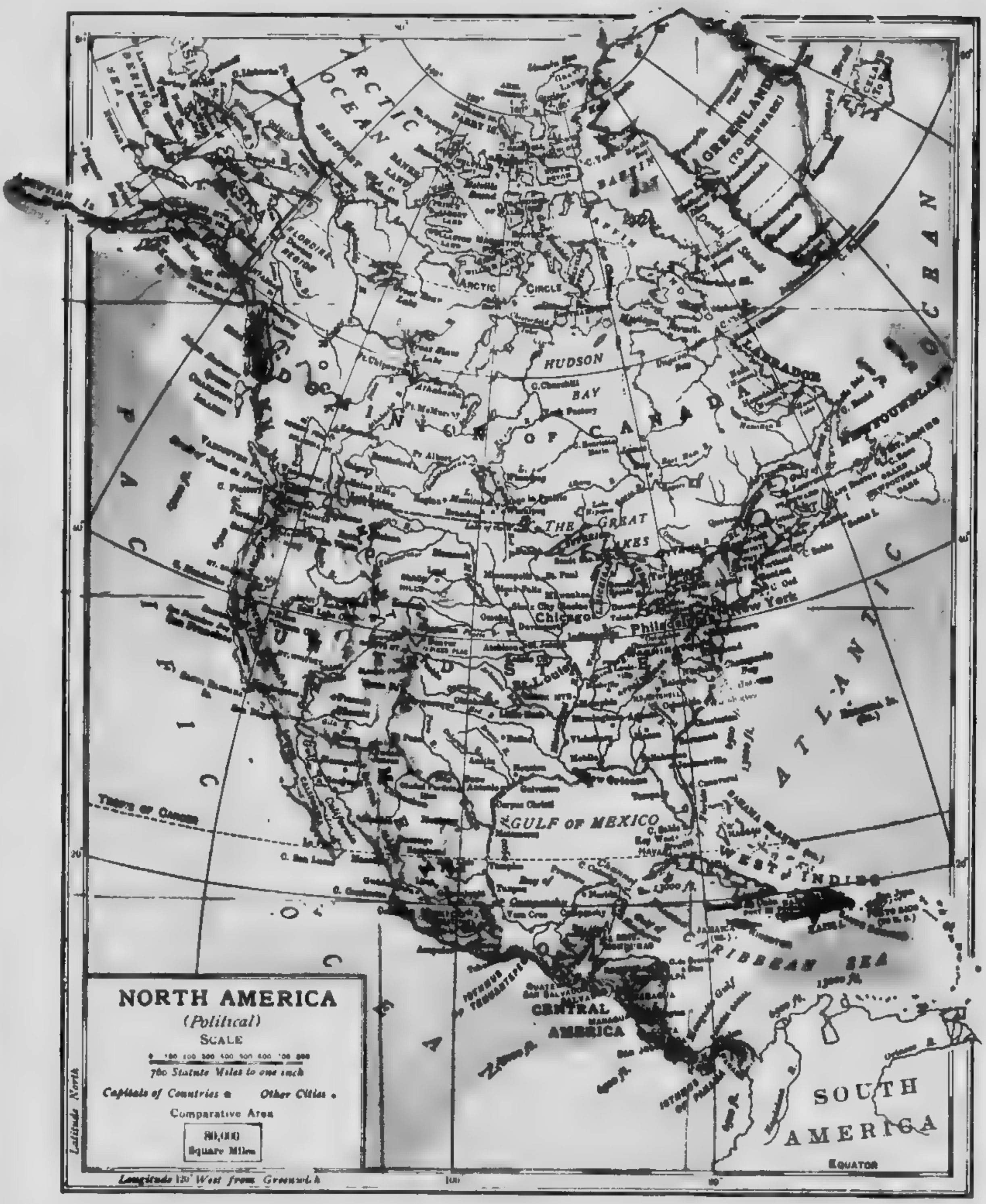
The Rocky Mountain Highland in the United States includes generally two series of nearly parallel systems; the eastern and higher *Sierra Nevada* and *Cascade Mountains*, and the lower system, known as the *Coast Ranges*, which face the Pacific in an almost unbroken wall. The Sierra Nevada and the Cascade Mountains are lofty and majestic and contain many glaciers and old volcanic peaks. *Mount Whitney*, on the southern Sierra Nevada, rises to an altitude of nearly 15,000 feet, and is the highest peak in the United States.

Highlands of Mexico and Central America. In Mexico the Rocky Mountain Highland consists of a series of high mountain ranges close to the eastern and western coasts, and of the high Mexican Plateau lying between these ranges.

The western ranges, of which the *Sierra Madre* is the most important, contain many slightly active volcanic peaks. In Central America the mountains still [illegible] almost con[illegible] close to th[illegible] the wester[illegible] pecially through the larger part of Mexico and Central America there is little room for settlement near the Pacific. Hence the population is sparse.

The Appalachian Highland. The Appalachian Highland extends from the Gulf of St. Lawrence to Alabama. It consists of the *Cumberland* and *Alleghany Plateaus* in the west, and the *Appalachian Mountains* in the east, with the *Great Valley*, a long, narrow depression containing portions of several rivers, lying between.

Compared with the Rocky Mountain Highland this eastern highland is only a gentle rise of land, for it is not more than 200 miles wide, and its greatest altitude is only a little over 6,000 feet. The highest peaks are


NORTH AMERICA
(Political)
SCALE
0 100 200 300 400 500 600 700 800
760 Statute Miles to one inch
Capitals of Countries ●
Other Cities •
Comparative Area
80,000 Square Miles
Latitude North
Longitude 120° West from Greenwich
100
80
ARCTIC OCEAN
BERING SEA
GREENLAND (TO DENMARK)
ICELAND
BAFFIN BAY
BAFFIN
ARCTIC CIRCLE
KLONDIKE REGION
HUDSON BAY
C. Churchill
LABRADOR
NEWFOUNDLAND
DOMINION OF CANADA
Great Slave Lake
Athabasca
Ft. McMurray
Ft. Albert
Vancouver
THE GREAT LAKES
Quebec
St. Paul
Chicago
New York
Philadelphia
St. Louis
New Orleans
Galveston
Corpus Christi
Mobile
GULF OF MEXICO
Tropic of Cancer
C. San Lucas
Bay of Campeche
Vera Cruz
Key West
HAVANA
BAHAMA ISLANDS
WEST INDIES
JAMAICA
PORTO RICO
CARIBBEAN SEA
ISTHMUS OF TEHUANTEPEC
CENTRAL AMERICA
GUATEMALA
SAN SALVADOR
MANAGUA
ISTHMUS OF PANAMA
Bermuda Is.
PACIFIC OCEAN
ATLANTIC OCEAN
UNITED STATES
MEXICO
SOUTH AMERICA
EQUATOR

found in New Hampshire and North Carolina. The mountains composing this highland are very much older than those of the western ranges, and have been worn down until, as is supposed, they have lost one half their height. This accounts for their rounded appearance in contrast to the rugged peaks of the newer Rockies and Sierras of the west.

In Canada the Notre Dame Mountains, which lie along the south shore of the St. Lawrence and extend into the Gaspé Peninsula, form the most eastern end of the Appalachian Range.

The rugged Pacific coast, showing islands left by the wearing away of the weaker rocks.

The Laurentian Plateau. The St. Lawrence River flows in a valley that separates the Laurentian Highland from the Appalachian.

The Laurentian Highland extends from the Labrador peninsula south-west toward the Great Lakes; thence running north of these lakes, the plateau bends to the north-west and approaches the Arctic Coast not far from the west shore of Hudson Bay. This broad, curved plateau is generally about 1,500 feet above sea-level, except on the coast of Labrador, where it is from 3,000 to 6,000 feet high. It encircles Hudson Bay on three sides and consists of hard crystalline rock

This region was once much higher than it is now, but glaciers, wind, and rain have worn it down and the debris has been carried away to form the fertile lands to the south and west.

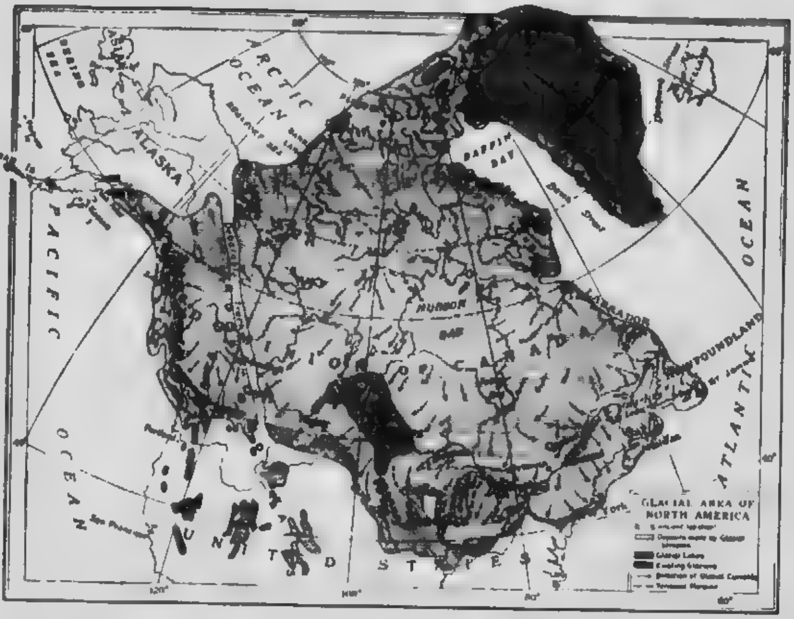
A wheat field in Manitoba. Notice how level the Great Central Plain is in this region.

Atlantic Coastal Plain. The Coastal Plain which borders the Atlantic Ocean is extremely flat and nowhere rises much over four hundred feet above the sea. It is well watered by the many streams flowing down from the Appalachian Highland, and contains large areas of fertile soil, which are well adapted to agriculture. The colonies of England planted in this region soon became prosperous and rich, and the coastal plain was the agricultural centre of the country until the extension of settlement westward showed the superiority of the Great Central Plain.

The Great Central Plain. The Great Central Plain, lying between the Appalachian and the Rocky Mountain Highland, extends from the Arctic Ocean to the Gulf of Mexico. It is lowest along the great Mississippi River to the south and the Mackenzie River to the north. In the portion east of the Mississippi River the slopes are gentle and the altitudes low.

West of the Mississippi River the plain rises gradually in altitude, reaching a height of about 5,000 feet where the mountains actually begin.

A barley field in Manitoba. (Great Central Plain.)



Throughout large areas the plain extends to the horizon in broad, rolling swells, with hardly a break. Owing to its gentle slopes and to the magnificent system of great rivers which flow through it, the Great Central Plain is an extremely important part of Canada and the United States.

Glaciation. The surface features of northern and eastern Canada and the north-eastern United States have been greatly modified by glaciation. A great glacier, originating somewhere in northern Canada, moved gradually out in all directions until it occupied this whole area, except, perhaps, a small region in Wisconsin. This sheet of ice was more than a mile in depth. It must then have appeared much as the interior of Greenland does now, that is, as a broad snow and ice plain, unbroken by any points of land.

Throughout the glaciated area the soil was removed from the hilltops, and deposited regularly in the valleys, and the rocks were grooved often to a depth of several inches; the scratches still show the direction from which the ice came. Nearly every stream is broken by rapids or waterfalls, which are the work of the ice. The whole country is also studded with countless lakes which have been formed in the depressions hollowed out by the action of the ice on the softer rocks. The Great Lakes are probably due in part to the action of the glaciers.

Drainage and Divides. The *Mississippi River* and its tributary, the *Missouri*, together form the longest river in the world, and drain by far the larger part of the great Central Plain of the United States. The larger rivers of this plain are all navigable for long distances; the Mississippi to St. Paul, and the Missouri to Fort Benton. The Mississippi System contains over 9,000 miles of navigable rivers, and hence furnishes a valuable route for commerce. A low divide, sometimes called the *Height of Land*, separates the basin of the Mississippi from the north-flowing streams which drain either into the Arctic Ocean or Hudson Bay.

The region to the north of the basin of the Mississippi is subdivided by an east-west divide, which separates the basins of the *Assiniboine* and *Saskatchewan* from those of the *Peace* and *Athabaska* rivers. The Southern subdivision is drained by the *Red*, *Assiniboine*, and *Saskatchewan* rivers through the *Nelson River* into Hudson Bay.

To the north of the basins of the Saskatchewan and Churchill rivers, lies the chain of great lakes which follows the border of the Laurentian Plateau northwestward, consisting of *Lake Athabaska*, *Great Slave Lake*, and *Great Bear Lake*. The heads of these three lakes are in the Laurentian Plateau and their lower ends extend into the Central Plain. The western part of this subdivision is drained by the *Peace*, *Athabaska*, and *Liard* rivers, and the eastern part by many short streams flowing into the *Mackenzie River*. The Mackenzie River, carrying an enormous volume of water, is the common outlet of these lakes and rivers, and is navigable from

Great Slave Lake to the Arctic Ocean, a distance of 1,300 miles.

The Rocky Mountains are, in a general way, the divide between the streams flowing to the Atlantic or the Arctic, and those flowing to the Pacific. In the south-western United States, however, the Continental Divide is west of the Rocky Mountains.

Nearly all the streams flowing into the Pacific Ocean originate on the western slopes of the coast mountains, and are therefore short and rapid. Only five large rivers rise east of these mountains and drain into the Pacific. These are the *Yukon*, the *Fraser*, the *Columbia*, the *Sacramento-San Joaquin*, and the *Colorado*, which flows into the Gulf of California. Thus the water-ways to the Pacific are few as compared with those to the Atlantic, and the ports are not the chief outlets for the products of the rich agricultural and manufacturing areas of the country adjacent to the Pacific Coast.

In the northern portion of the Appalachians the divide between the rivers flowing into the Atlantic and the Mississippi is west of the highest mountains, so that several streams like the *Hudson*, the *Delaware*, the *Susquehanna*, and the *James*, flow through gaps in the Appalachian Mountains. Each of these river valleys forms a natural highway across the mountains, and is of great importance in present-day commerce, as it was in early exploration. In the southern Appalachians the divide is along the eastern ridge of the mountains.

The basin of the *Great Lakes* and of the *St. Lawrence River* is separated on the north from the Arctic and Hudson Bay Drainage by the low Height of Land already mentioned and by the Laurentian Plateau. The St. Lawrence River is interrupted by many rapids; around these, canals have been built, so that in summer it is possible for ocean going vessels to reach the upper end of Lake Superior, i. e., half-way across the continent. Thus, the St. Lawrence River and the Great Lakes together form the only natural water route into the interior of the continent from the east, as does the Mississippi from the south.

The divide between the Great Lakes Basin and the Mississippi Basin is, in places, very low. The low and short divides between adjoining streams were of great importance during the exploration of the interior of the continent, because they offered the easiest portages. In many cases towns were developed at these carrying places, as Toronto, Dundas, and Queenston in Ontario; Portage la Prairie in Manitoba; and Albany in the United States.

Climate. The fact that the highlands of North America extend in a general north-south direction is of great importance in determining the climate of the continent. The westerly winds from the Pacific Ocean are deprived of much of their moisture by the lofty highland, while a large area of the western Mississippi Basin, the Plateau States, the province of Alberta, and part of Saskatchewan, because they lie to the leeward of the great mountain wall to the west, have a scanty rainfall. In the continent of Europe the highlands extend, approximately, in an east-west direction, and hence the westerly winds, blowing from the Atlantic Ocean, can carry their moisture far into the interior of the continent. This difference illustrates clearly the relation between mountains and winds, and rainfall.

The Water Gap of the Delaware River.

In North America the region of westerly winds lies north of [illegible]3° in the winter time; in the summer time it moves north of 35°. The larger part of the continent, therefore, lies in the region where the climatic differences between summer and winter are great. Owing to its size and position, North America has the most strongly marked continental climate in the world, except Eurasia.

The Western Coast. The most uniform conditions of temperature and moisture are found along the western coast, where the winds blowing in from the Pacific bring the warmth and moisture acquired from the ocean. On the mountain slopes bordering the coast north of central California the annual rainfall is very heavy, in some places more than a hundred inches. In summer, when the westerly wind system has moved north, but little rain falls in this region, even on the high mountain peaks, but in winter the mountains receive abundant rainfall as far south as southern California.

The Great Central Plain. The great interior plain of North America is very cold in winter and very hot in summer. In the summer growing season, when the winds blow inland, it is fairly well watered. The heaviest rainfall is in the eastern and southern portions. In summer the warmest portion of the plains region is along the lower Missouri River; in winter the centre of the extreme continental cold is in Canada, in the region of the Coppermine River, north-east of Great Bear Lake.

The Eastern Coast. The weather on the eastern coast of North America is more variable than in any other portion of the continent. In winter, when a storm centre is occupying the interior, the north-east winds passing over the cold Arctic Current, usually bring snow, while the south-easterly winds, coming from over the warmer North Atlantic Drift, bring rain. Inasmuch as the storms usually move from the south-west to the north-east, they follow a path nearly parallel to the Appalachian Mountains. Thus the rainfall is evenly distributed, and one side of the highland is not dry and the other wet, as is the case in the Rocky Mountain Highland. The cold north-westerly winds of winter often cause extremely low temperatures, so that occasionally (as on Feb. 17, 1903) killing frosts may extend even into southern Florida.

The Gulf Coast. Along the Gulf Coast, especially west of the Mississippi River, well marked monsoon winds occur with the change of season from winter to summer. The summer winds blowing in toward the Mississippi Valley come from the warm waters of the Gulf of Mexico and carry an abundance of moisture, a large part of which falls as heavy rain near the coast. As a result the region about New Orleans has the heaviest rainfall found in North America, with the exception of that on the coast of British Columbia and Alaska and in the states north of California.

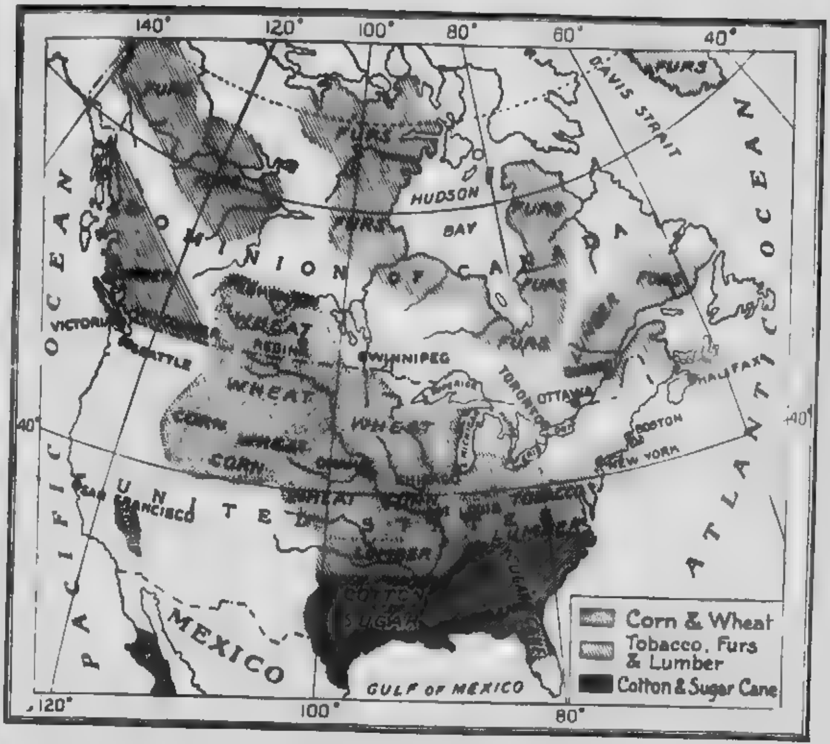
The western part of Texas, which is out of the range of the Gulf winds, is very dry.

In Mexico and Central America, where the prevailing climate is that of the trade-wind region, the east coast is wet and the west coast dry, although nowhere a desert. As the winds in passing over the eastern slopes rise, they lose the larger part of their moisture, so that the high plateaus in northern Mexico are exceedingly dry.

Vegetation. Northern North America, including the island region of Arctic America, as far south as the coast of Hudson Bay and the coast of Labrador, is covered by perpetual ice or by the grassy *tundra.* This vast area is unoccupied except by a few Eskimos along the coast, or by wandering Indians who hunt here in the summer months.

South of this area is the broad region of coniferous trees, which extends across the continent from the Atlantic to the Pacific, and includes the greater part of Canada, as well as northern New England and the region about the Great Lakes. Hemlock, spruce, fir, cedar, and white pine, all valuable as lumber or for paper pulp, are the principal coniferous trees. These trees also cover the mountain tops and western slopes of the Rocky Mountain Highland, where the climatic conditions, on account of the altitude, are similar to those found in the higher latitudes. South of the region of conifers is a very mixed forest flora, characterized by such deciduous trees as maples, oaks, birches, elms, hickories, poplars, beeches, etc.

The region east of the Mississippi River is grassland, and forest of either coniferous or deciduous trees. The south-eastern coast from Norfolk to New Orleans contains many palms and other sub-tropical trees, including the long-leaf or hard pine, which furnishes valuable lumber. This forest and grassland area gradually merges on the west into the open, grassy prairies or steppes of the valleys of the Mississippi, the Red River of the north, and the Saskatchewan.



In Canada the rainfall becomes gradually less from the Maritime Provinces westward to the foot-hills of the Rockies. At Halifax it is about 60 inches annually; at St. John 47; at Quebec 35; at Kingston 26; at Winnipeg 18; and at Calgary about 14. From Winnipeg to the Rocky Mountains trees are practically absent except along the watercourses.

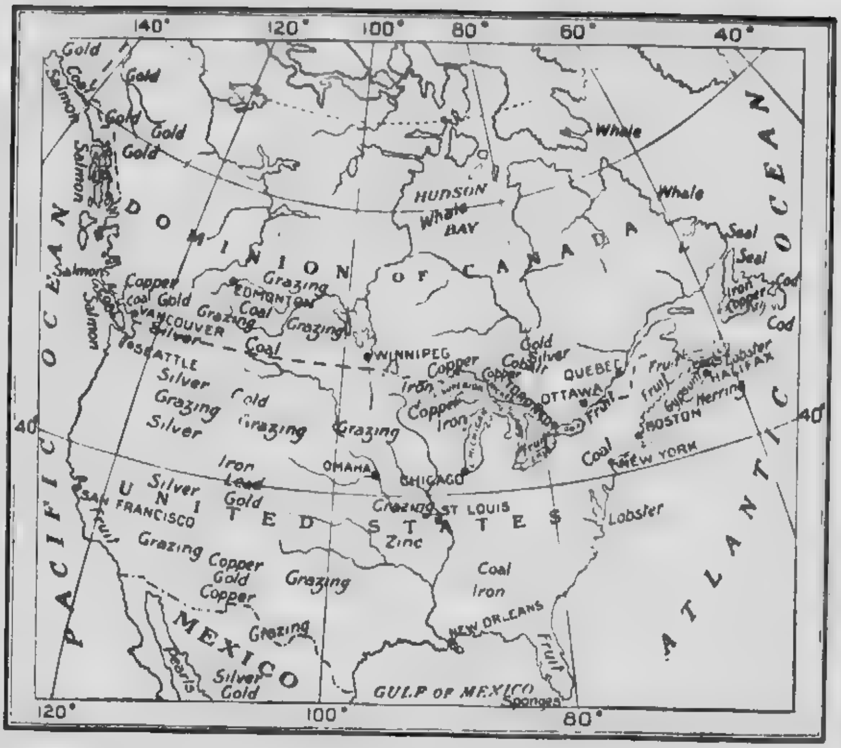
Between the Rocky Mountains and the Coast Ranges, particularly toward the north where the mountains are lower, is a forest region. Along the coast, owing to the moist and mild climate, the country is covered with forests of magnificent growth. Here are to be found the great firs of British Columbia and of Washington State, many of which grow to a height of over 200 feet.

In the United States, between the 100th Meridian and the foot-hills of the Rocky Mountains, the steppes are more arid and trees are absent. Within this arid steppe region there are small desert areas, but the largest deserts of the United States lie between the Rocky Mountains and the Sierra Nevada. Central America is everywhere occupied by dense, sub-tropical forests or by savannas. These sub-tropical forests include many valuable timber trees, such as rosewood and mahogany; also banana trees, rubber trees, and others that yield valuable commercial products.

Animals of North America. The characteristic wild animals of North America have already been mentioned. Many other animals, not distinctive of North America, are found in great numbers in the wild and unexplored regions. Great herds of elk exist in Canada, and the grizzly, cinnamon, and black bear are common in the more rugged mountains of the western highlands of the continent.

Minerals. The rocks that make up the mountain masses often contain valuable minerals. North America is unequalled in the richness and variety of its mineral products.

Coal, gold, silver, iron, copper and *nickel* are found in quantities unknown elsewhere. The coal-fields of the Dominion of Canada have an area of 65,000 square miles and are six times as large as those of all the countries of Europe taken together. The area of the coal-fields of the United States is three times that of the Dominion. The country lying to the west of the Rocky Mountains is one of the chief gold-producing regions of the world. Mexico has long been famous for its silver mines. This metal is also found in great quantities in the western auriferous belt, and northern Ontario is now known to



Mineral, fish, fruit, and grazing districts of North America.

be exceedingly rich in this precious metal. Iron ore exists in immense quantities in the country about Lake Superior as well as in the eastern part of the Dominion. The richest of all the copper deposits hitherto discovered is in the region south and west of Lake Superior. This metal is also abundant west of the Rockies. The Ontario nickel mines are the principal source of the world's supply of this metal.

People. Except for the Eskimos of Alaska and north-eastern North America, the whole continent was formerly occupied by Indians. These Indians were of many tribes, speaking different languages, and ranging in civilization from the true savages to the barbarous tribes who practised agriculture to some extent. The Indians of North America are now almost wholly restricted to the western and northern portions of the continent and to the mountains of Mexico and Central America. They have dwindled in numbers until there are only between 90,000 and 100,000 in Canada and about 266,000 in the United States—in each case, the wards of the nation. Certain allowances toward their support have been made in lieu of the lands which they occupied. Schools have been established among them, and instruction given in farming operations.

Indians and their home.

The larger part of North America is occupied by descendants of the early colonists sent out by the European nations, or by immigrants who have since come from Europ English is spoken generally throughout th continent, although in the Province of Queb and in parts of Manitoba, Saskatchewan, Alberta and the State of Louisiana, French is the prevailing language. In Mexico and Central America and for the most part in the West Indies, Spanish is spoken.

In the southern Atlantic and Gulf stat in the West Indies, and in Central Americ where the warm climate makes it difficult carry on continuous labour, there are great numbers of negroes, mostly descended fro slaves brought from Africa to till the plantation It is mainly through their labours that the great tobacco, cotton, sugar and rice industries of th south have been built up. The early Spaniards who came to Mexico and Central Americ married with the Indians, and their descen ants, known as Mexicans, are now the most influential people in those regions.

THE DOMINION OF CANADA

XXV. CANADA AS A WHOLE

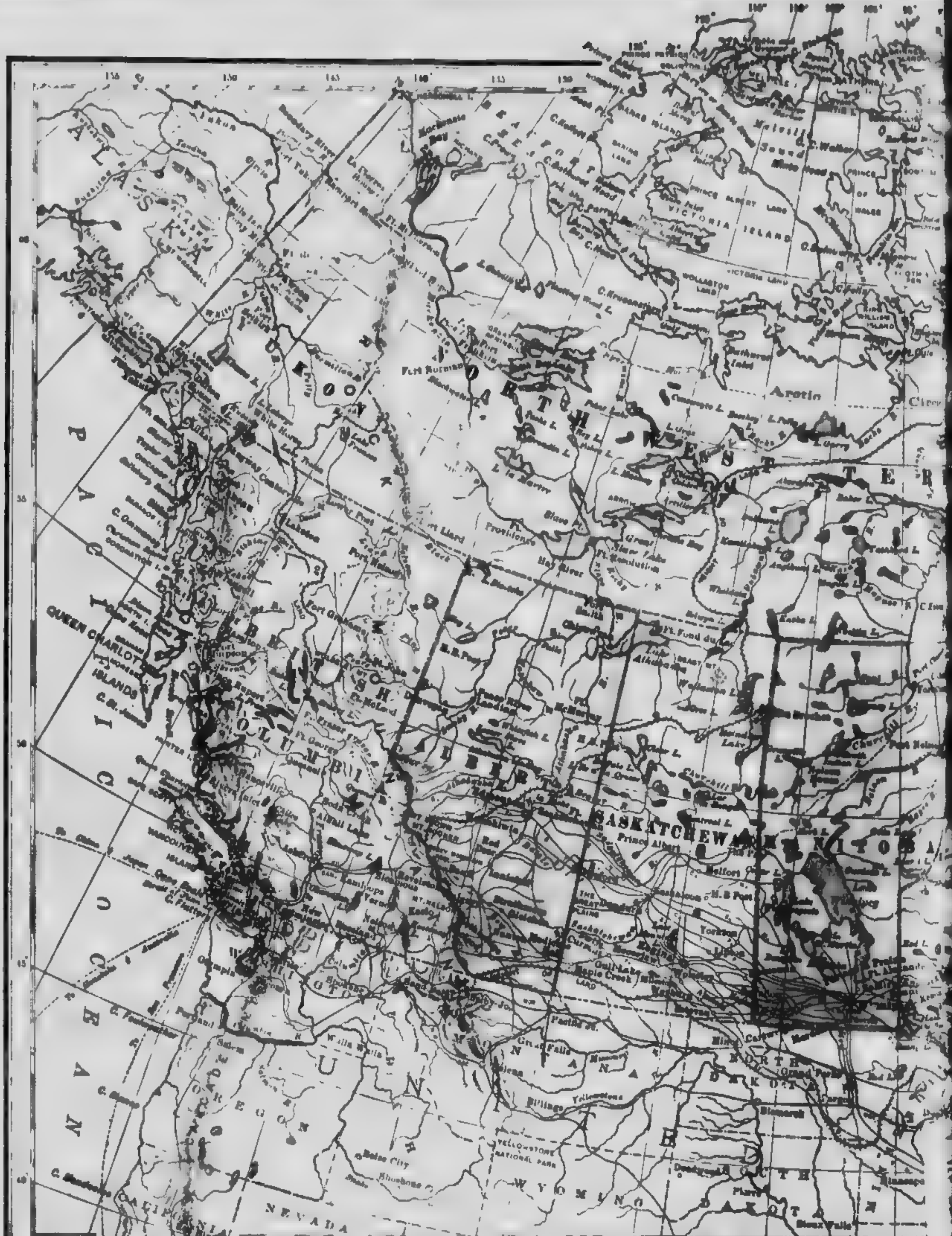
The Countries of North America. The continent of North America comprises the following countries: in the north, Canada and Newfoundland, which are British Colonies; Alaska, which is part of the United States; and Greenland, which is a Danish Colony; in the middle, the United States; in the south, Mexico, six small Central American Republics, and Honduras, a British possession; also the islands of the West Indies, which belong to various countries or are independent.

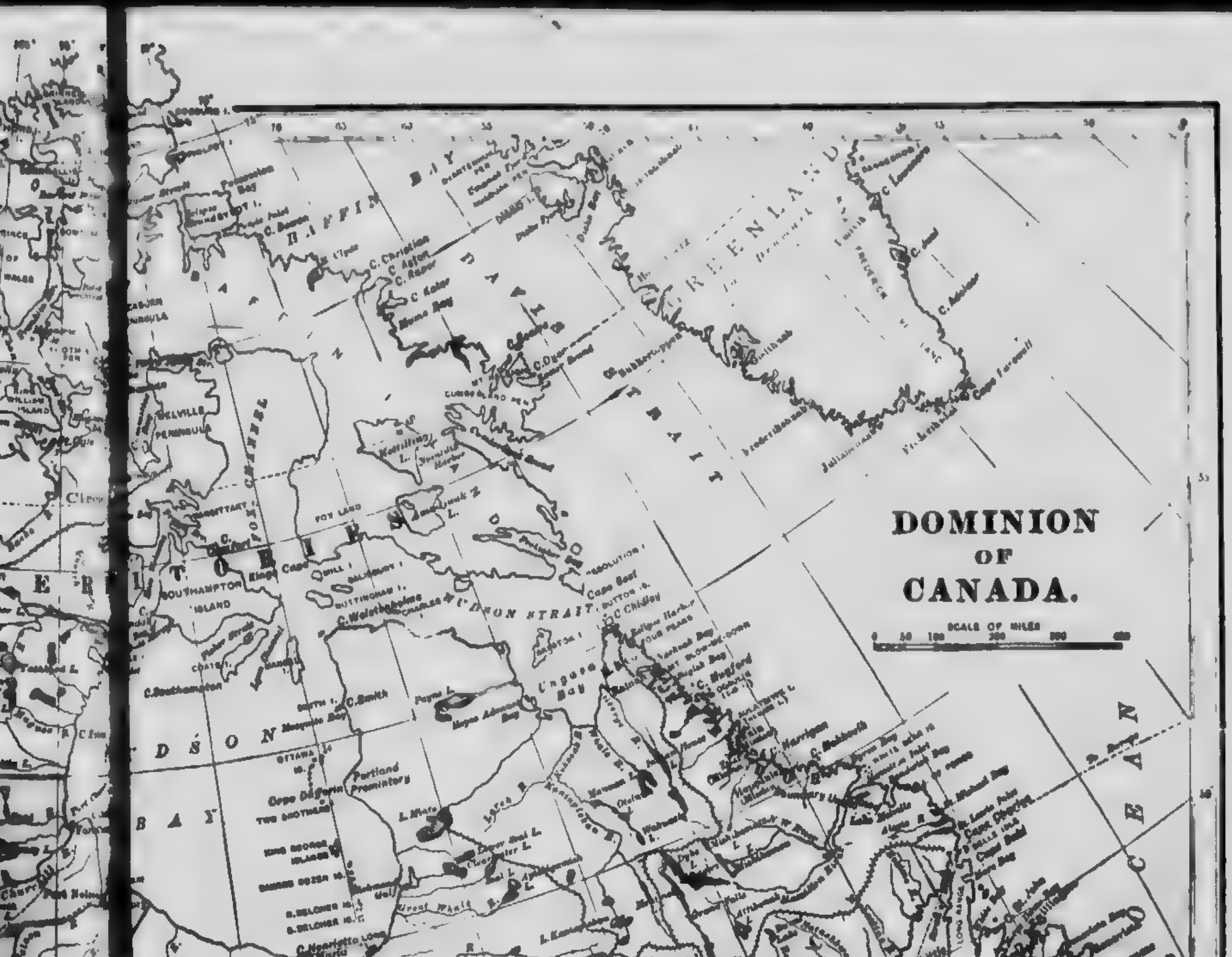
Canada, Past and Present. When America was discovered by Columbus in 1492, the continents of North and South America were occupied by Red Men, who were called Indians from the mistaken supposition that the new country was a part of India. Canada was then a vast solitude of uncultivated plains, unbroken forests, and lonely mountains. Here and there on some easily defended spot stood a small collection of Indian lodges. These were surrounded by a strip of tilled land growing corn and pumpkins; for some of the forest Indians, such as the Iroquois, Hurons, and certain tribes of the great Algonquin nation, had made progress toward a rude civilization of their own. Many of the tribes, however, dwelt in wigwams of bark beside some favourite stream or lake.

Victoria Square, Montreal.

To-day, from ocean to ocean, Canada has more than six millions of people. It comprises nine provinces and two territories. The untilled plains and vast forests are giving place to well-cultivated farms and smiling homes. The lakes and rivers are thronged with the ships of a busy and growing commerce. Large districts, which once seemed only a wilderness of rock and scrub, are yielding vast treasures of gold, silver, iron, coal, copper, nickel, plumbago, and other riches of the mine. Canada has become the richest and most powerful of the great colonies, and is the granary of the British Empire.

Size and Extent. Canada has an area of nearly three and three-quarter millions of square miles. It forms about one third of the whole British Empire, and is only a little less in size than the continent of Europe. The United States, without the territory of Alaska, is smaller than Canada by more than seven hundred thousand square miles. In other words, "if the United States, without Alaska, were placed upon Canada, British Columbia, Alberta, and one third of Saskatchewan would be left uncovered." British Columbia alone is larger than the European


ALASKA
YUKON
NORTH WEST TERRITORIES
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
PACIFIC OCEAN
QUEEN CHARLOTTE ISLANDS
VANCOUVER ISLAND
VICTORIA ISLAND
PRINCE ALBERT LAND
WOLLASTON LAND
VICTORIA LAND
PRINCE OF WALES
Mackenzie Bay
Great Bear Lake
Great Slave Lake
L. Athabasca
Arctic
Fort Norman
Fort Liard
Ft. Providence
Hay River
Ft. Resolution
Ft. Chipewyan
Fort Simpson
Fort Graham
Ft. George
Ft. McLeod
Kamloops
Revelstoke
Vernon
New Westminster
Olympia
Spokane
Walla Walla
Salem
Portland
Helena
Great Falls
Billings
Yellowstone
YELLOWSTONE NATIONAL PARK
Boise City
OREGON
IDAHO
MONTANA
WYOMING
NEVADA
CALIFORNIA
NORTH DAKOTA
SOUTH DAKOTA
Bismarck
Grand Forks
Pierre
Sioux Falls
Prince Albert
Saskatoon
Yorkton
Regina
Moose Jaw
Swift Current
Maple Creek
Medicine Hat
Churchill
Port Nelson
Sacramento
San Francisco
Oakland
C. Flattery
C. Mendocino
C. Blanco
C. Foulweather
UNITED STATES
Longitude West from Greenwich


DOMINION
OF
CANADA.
SCALE OF MILES
BAFFIN BAY
DAVIS STRAIT
GREENLAND
HUDSON STRAIT
HUDSON BAY
JAMES BAY
Ungava Bay
ATLANTIC OCEAN
GULF OF ST. LAWRENCE
NEWFOUNDLAND
SOUTHAMPTON ISLAND
C. Chidley
Cape Farewell
C. Sable
Cape Cod
Halifax
Liverpool
Lunenburg
Yarmouth
Quebec
Montreal
Ottawa
Kingston
L. Ontario
Lake Superior
Boston
New York
Albany
Chicago
Detroit
Bay City
Port Huron
Sault Ste. Marie
Port Arthur
Nipigon
White River
Chapleau
Rupert R.
Eastmain
Portland Promontory
Cape Dufferin
Mansfield I.
Cape Canso
Sable I.
Anticosti

countries of France, Italy, and Portugal taken together. Ontario is larger than Germany, or than Italy and Great Britain taken together; Nova Scotia, the smallest but one of the Canadian provinces, is larger than Switzerland, Holland, or Denmark.

XXVI. CANADA AS A WHOLE; PHYSICAL

Divisions. Canada contains five well-marked physical divisions, which, in their general characteristics, vary greatly. These are the Acadian Region, the Lowlands of the St. Lawrence, the Laurentian Highlands, the Great Central Plain, and the Great Mountain Region.

A Fishing Village in Cape Breton, Nova Scotia.

THE ACADIAN REGION

Position. The Acadian Region includes the Maritime Provinces, together with the south-eastern part of the Province of Quebec; it forms the north-eastward continuation of the Appalachian Highland. It contains the low-lying *Notre Dame Mountains* of south-eastern Quebec and of the south bank of the River St. Lawrence, with their continuation, the *Shickshock Mountains* of the Gaspé peninsula.

Surface and Drainage. The surface of this region, especially in New Brunswick, is broken by subordinate and less continuous elevations, seldom exceeding 1,000 feet in height and lying nearly parallel to the main range of the Notre Dame Mountains. The elevations are rolling hills and ridges, and the whole country is suitable for agriculture. The Shickshock Mountains are considerably higher, some elevations being over 3,000 feet. Thus the interior of the Gaspé peninsula is a rough, mountainous plateau.

The most important rivers of the Acadian region are the *St. John*, the *Miramichi*, and the *Restigouche*. These water-ways greatly facilitate navigation and enable lumbermen to float vast quantities of timber from the forests of New Brunswick to ocean ports.

Nova Scotia may be regarded as an outlying member of the Appalachian System of uplifts. A low ridge, nowhere exceeding 1,000 feet in height, runs through the central part of the province, and a broad range of broken hills, terminating in Cape Breton Island, extends along the whole Atlantic Coast. These hills, while little fitted for agriculture, contain gold-bearing veins and are covered with valuable forests. The best arable lands are toward the Bay of Fundy, and along the northern side of the peninsula.

The Restigouche Valley, New Brunswick.

From the narrowness of their watersheds, the rivers of Nova Scotia are necessarily small. The tide, however, flows up for a considerable distance, and thus renders them serviceable as water-ways.

Soil. In the eastern townships of Quebec and in New Brunswick there are numerous large, level areas in the valleys between the ridges. The character of the soil in these valleys varies greatly, owing partly to the difference in the underlying rocks from which the soil was formed, but mainly to the nature and amount of the deposits during the glacial period. Some parts have fine alluvial soil; others, especially on the uplands, consist of bogs, heaths, and barren plains.

Climate. The Acadian region has an ample rainfall, averaging a little more than 60 inches at Halifax, and diminishing, as we go westward, to about 35 inches in western New Brunswick. In this region, particularly along the coast, the temperature is less subject to extremes than in any other part of the Dominion, except along the western coast of British Columbia. On the Atlantic coast the spring is late, because the inblowing winds pass over a portion of the ocean, chilled by an inshore current from the north, and they therefore bring little warmth. At this time, also, the land along the coast is often covered with fogs. The summer and autumn are clear and pleasant. The winter lacks the clear and bracing air of the west, but there is plenty of snow, which is of great use in lumbering.

Rapids in Niagara River, Ontario.

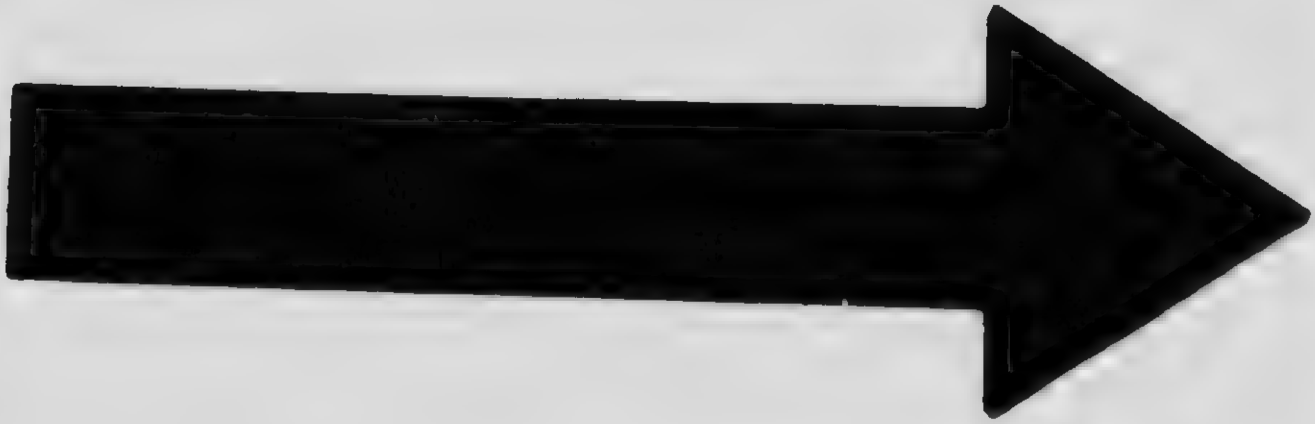
LOWLANDS OF THE ST. LAWRENCE VALLEY

Position. This region comprises parts of the two provinces of Old Canada. In Quebec it is a broad, rich valley between the Laurentian Highland on the north and the Appalachian range on the south-east. In Ontario it includes a broad plain stretching from Lake Ontario to the Laurentian hills, and a fertile peninsula inclosed by lakes Ontario, Erie, and Huron.

Surface and Drainage. This region naturally falls into three divisions. The first extends from a short distance below Quebec City to the lower end of Lake Ontario. Here it is interrupted by a projecting spur from the Laurentian Plateau, which crosses the St. Lawrence and forms the Thousand Islands. Much of this division is almost absolutely level. No part of it is more than 300 feet above sea-level, except where it is broken by a few detached hills from 600 to 1,000 feet high. At the western end of Lake Ontario there is an abrupt elevation of about 200 feet. The break in the level is so sudden that the land rises like an embankment and is known as the Niagara escarpment. This escarpment extends northwestward across the province from the Niagara river at Queenston to Cape Hurd in the Bruce peninsula.

The second, or central, division of the lowlands of the St. Lawrence valley extends from the Niagara escarpment in a northerly and easterly direction until it reaches the Georgian Bay and the Laurentian Plateau. This broad area, diversified by hill and valley, is a fertile farming country.

The third division is the peninsula inclosed between the Niagara escarpment and lakes Erie and Huron. The country stretches westward from the escarpment in a broad, level table-land, which is nowhere more than about 1,500 feet above the sea-level, and which slopes from this elevation gradually



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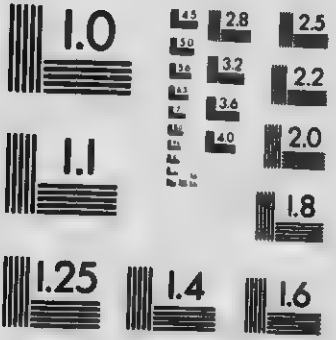

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downward to lakes Erie and Huron, about 575 feet above the sea. This large area is of almost uniform fertility and constitutes the finest agricultural region, not only of Ontario, but probably of Canada.

Celery Beds.

The whole of the St. Lawrence Valley is well watered. A sufficient rainfall of about 30 inches in the year feeds its many streams. These are everywhere present and carry the waters of their basins into the St. Lawrence and Ottawa rivers as well as into lakes Ontario, Erie, and Huron.

Soil. The soil varies from sandy loam to clay loam. Fine crops of wheat, barley, oats, maize, and peas are readily grown. Orchards flourish almost everywhere. The counties bordering on Lake Erie and the south-western part of Lake Ontario produce the choicest fruits, and most farms in the Niagara and Essex peninsulas have extensive vineyards and fine peach orchards.

Like nearly all the region east of the 100th meridian, the St. Lawrence valley receives an abundant rainfall during the growing season; this is derived from the moisture carried from the Atlantic Ocean by the prevailing winds.

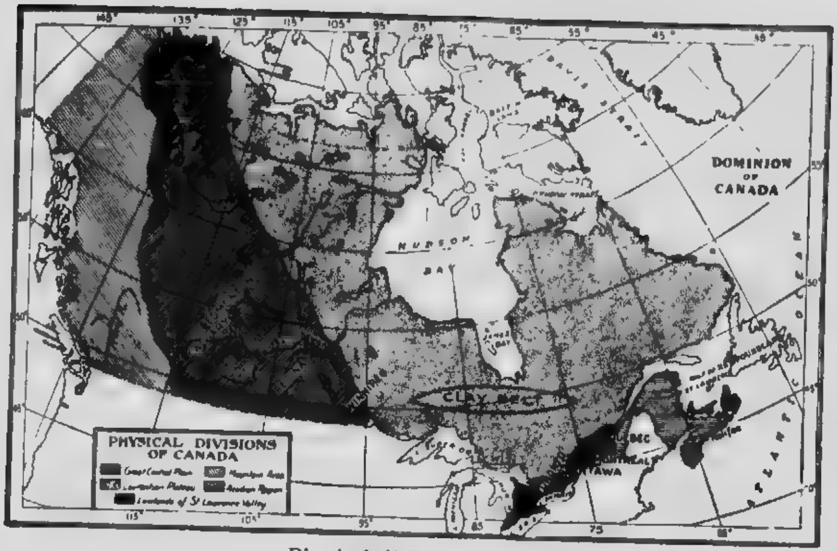
Over the greater part of the region the variation in temperature between the heat of summer and the cold of winter is considerable. In winter the snow is crisp and sparkling, the sky blue, and the atmosphere dry and invigorating. In the counties facing Lake Ontario and Lake Erie — and, indeed, throughout the whole western peninsula — the influence of the Great Lakes is felt in moderating the heat of summer and the cold of winter.

THE LAURENTIAN HIGHLAND

Position. This vast region, composed of very hard crystalline rock, with an area of about 2,000,000 square miles, comprises more than half of the Dominion of Canada. On three sides it surrounds Hudson Bay in the form of a horse-shoe open to the north. On the eastern side, where it reaches its highest elevation, it constitutes the whole of the Labrador peninsula. On the southern side it extends through the province of Ontario as far as Lake Superior and Georgian Bay. A spur stretches southward and crosses the St. Lawrence River at the foot of Lake Ontario into the State of New York. Out of this spur are formed The Thousand Islands.

A Muskoka view.

Farther east the highland forms the greater part of that portion of the province of Quebec which lies north of the lowland bordering on the St. Lawrence River. West of Hudson



Physical divisions of Canada.

Bay, the Laurentian Highland stretches to the north-west. Its western boundary is nearly parallel to the Mackenzie River, and is a comparatively short distance from the river itself.

Surface and Drainage. The Laurentian Highland Plateau is very uniform in its physical features. Its average elevation is about 1,500 feet. The surface of this immense area is undulating and hummocky. Its most characteristic feature is, however, the innumerable lakes, large and small, with which it is covered. This peculiarity of the region is due to the fact that the plateau consists of two kinds of rocks. In the harder, worn away slowly under the action of the glaciers which covered the whole of the north-eastern part of North America, the smaller lakes were formed. In the softer and darker-coloured rocks, the larger lakes are found. As a consequence, the streams draining this region are very irregular and tortuous, flowing from lake to lake in almost every direction.

Soil and Vegetation. The soil is in general thin upon the ridges, but the valleys are often very fertile. In the southern part there are immense stretches of forest land of great value. In the far north, on both sides of Hudson Bay, hills and valleys produce only grasses, mosses, and lichens. This part forms the *barren lands* of Canada.

Climate. The whole of the Laurentian Highland is well watered. In winter the temperature is low; in summer, the southern parts have warm days and cool nights. Hence, certain localities, such as the Muskoka District, have become noted summer resorts. Beyond the height of land between the Great Lakes and Hudson Bay summer frosts are common.

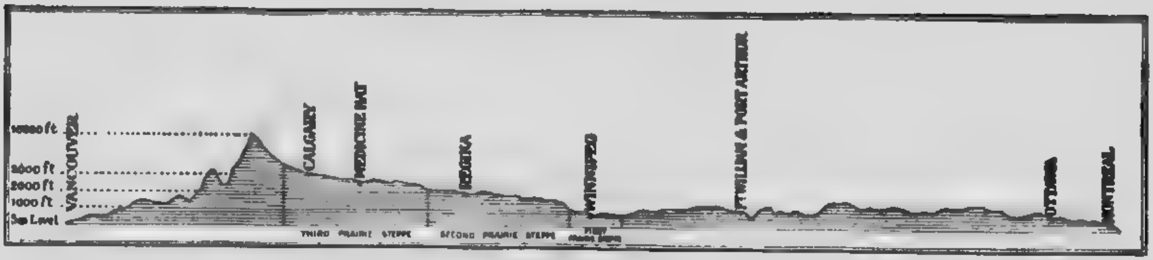
XXVII. CANADA AS A WHOLE; PHYSICAL DIVISIONS

(Continued)

THE GREAT CENTRAL PLAIN

Position. This plain is bounded on the east by the Laurentian Plateau, on the west by the Rocky Mountains, on the south by the international boundary line, and on the north by the Arctic Ocean. At the boundary between Canada and the United States, it is 800 miles wide, but the westward trend of the Laurentian Plateau reduces this to about 400 miles, in latitude 56°. A little farther north it is made still narrower by outlying spurs of the Rocky Mountains, but still farther north it again opens out to a width of about 300 miles.

Surface and Drainage. In passing westward, the plain is found to consist of three steppes. In the east there is the prairie-level of the Red River valley, which is about 800 feet above sea-level. This lies wholly within Manitoba.



Prairie steppes.

The second prairie-level begins in the south at the Pembina Mountains in Manitoba which continue northward in a number of hills to the Saskatchewan River. This level extends westward to a second and nearly parallel rise, crossing the boundary line about 104° W. Longitude and extending north-west across the North Saskatchewan River. The average height of this steppe is 1,600 feet. It is not so level as the first prairie steppe, but is diversified by low hills and ridges. The third steppe lies between the second and the base of the Rocky Mountains. Its average height is over 3,000 feet. The surface of this steppe is still more diversified than the last. Along the base of the Rocky Mountains is a belt of foot-hills. These consist of parallel ridges formed of wave-like folds of broken-down rocks.

The slope of this great plain is to the east and north. A line drawn easterly from the base of the Rocky Mountains to Lake Winnipeg shows an average descent of over five feet to the mile. Hence the rivers are in general rapid. A low transverse watershed begins in the east in about latitude 54°, and passes in a westerly direction, dividing the rivers of the Saskatchewan system from those of the Mackenzie and Athabaska systems.

The southern part of the first prairie-level is drained by the *Red*, *Assiniboine*, and other rivers into Lake Winnipeg. The southern part of the second and third steppes is drained into the same lake by the North and South Saskatchewan and their tributaries. The *Churchill* and *Nelson*, which flow into Hudson Bay, and the *Peace*, *Athabaska*, *Slave*, and *Mackenzie*, drain the northern part of the Great Central Plain.

Soil. Throughout the whole of the Great Central Plain the soil is, in general, good. There are large tracts of rich, black loam, varying from a foot to ten feet in depth. This is alluvial in its origin and is very fertile. In the southern part of the plain toward the west there are occasional stretches of sandy loam. These, however, grow fine crops where irrigation is used. The soil of the Great Central Plain is so rich in nitrates, the important food of *hard* wheat, and the climate so favourable, that this region is now regarded as one of the best wheat-producing districts of the world.

Climate. The important characteristics of the climate of the great interior region are the clear, bracing atmosphere during the greater part of the year; the wide range of temperature between the heat of summer and the cold of winter; and the limited amount of precipitation, the rainfall varying from about eighteen inches at Winnipeg to twelve inches at Battleford.

A steam plough on the prairies.

The dryness of this region is due to two causes: to its distance from the ocean, so that it receives little moisture from the east and south winds; and also to the great Rocky Mountain Highland, which prevents it from receiving much moisture from the Pacific.

Grazing on the plains.

The rains occur chiefly in June and July, and are sufficient to mature the crops over the greater part of this region. Crops grow rapidly owing to the high temperature during the day, combined with much sunshine and the long period of daylight in each twenty-four hours.

THE GREAT MOUNTAIN AREA

Position. This region extends from the international boundary line to the Arctic Ocean, a distance of 1,300 miles, and from the foot-hills of the Rocky Mountains to the Pacific Ocean, a distance of about 400 miles in British Columbia.

Surface and Drainage. The characteristic feature of this immense area is the crumpled and crushed strata forming high, rugged mountains. There are two chief mountain systems — the Rocky Mountains in the east, with an average width of 60 miles, and the Coast Range in the west, with an average width of 100 miles. These systems are young when compared with the Appalachian and Laurentian systems; hence, they are not yet so greatly worn down by frost, rain, the action of glaciers, etc., and their summits are rugged, not rounded. To the west of the Coast Range lies another range which has been partly submerged. To it belong Vancouver Island, Queen Charlotte Islands, the peninsular portion of Alaska, and the Alaska Islands.

Between the Coast Range and the Rocky Mountains many less important ranges lie, such as the Selkirks, Purcell, Columbia, and Cariboo mountains. These are often referred to collectively as the Gold Ranges, and are about 80 miles wide. The region between the Coast and the Gold Ranges is occupied from the international boundary northward for 500 miles by the Interior Plateau.

The whole of this immense area is forest-clad, but owing to the greater rainfall there, the growth of the trees is more luxuriant upon the western slopes of the mountains. The southern part of the Interior Plateau is dry, but toward the north the coast mountains are lower and the interior is better watered. It is only when one approaches the Arctic that the barren tundra country begins.

Along the western base of the Rocky Mountains, there is a large valley, 700 miles long, between the 49th parallel and the head-waters of the Peace River. This valley is drained by the upper portions of the *Fraser* and *Columbia* rivers. These with their tributaries drain also the southern part of British Columbia. The *Skeena*, the *Nass*, and the *Stikine*, drain the northern part into the Pacific Ocean. The north-eastern part is drained by the head-waters of the *Peace*, *Liard*, and other tributaries of the *Mackenzie*. The *Yukon* and its tributaries drain the northern part of the mountain belt into Bering Sea. The rivers are frequently obstructed by rapids, but all have navigable

Peaks of the Rocky Mountains.

stretches which are of great use in transportation.

Soil. Throughout the whole of this mountain re[illegible] good arable tracts are found in the bas[illegible]ried-up rivers and lakes and in the alluv[illegible] at the mouths of rivers. In the interio[illegible]ottom lands are very fertile and produce abundant crops of wheat, barley, oats, and such fruits as apples, peaches, and grapes.

Climate. As regards climate, the Mountain Region of Canada is naturally divided into two parts. These are the West Coastal division, including Vancouver Island and a strip of land between the Coast Ranges and the Pacific Ocean; and the region to the east of the Coast Ranges, occupying the interior of British Columbia. In the first of these divisions, the prevalent south-westerly winds, warmed by the waters of the Pacific, render the climate mild and moist; the range between summer heat and winter cold is less than in any other part of Canada. The climate of this region does not differ greatly from that of the north of England. Owing to the large amount of rain and the comparatively high temperature, vegetation is rank, not only in the valleys but also on the mountain slopes. Trees grow to a great size, rendering it difficult to clear the land for agriculture.

Fruit farm, Penticton, British Columbia.

The southern part of the interior is dry and the summers are hot, but farther north where the coast ranges are lower, the rainfall is much greater and the heat is less. Everywhere the western slopes of the mountain ranges are moist, the eastern ones dry. The air currents in their eastward course deposit their moisture, as they ascend the mountains, on the western sides. They then descend on the opposite sides as dry winds. In the extreme north the climate is of sub-Arctic severity.

XXVIII. CANADA AS A WHOLE; RESOURCES

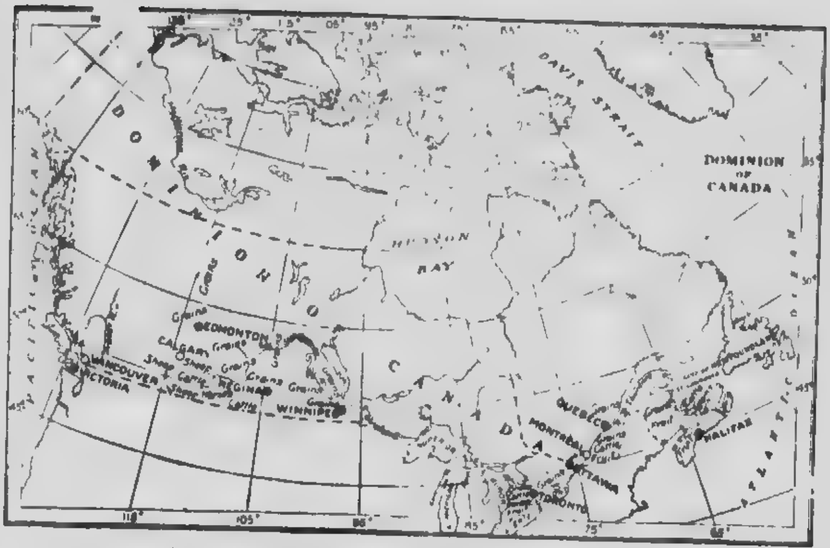
I. SOIL AND CLIMATE

The fertile soil found almost everywhere throughout the Dominion, and the favourable climate for such occupations as grain-growing, dairying, stock-raising, and fruit-growing, naturally make *agriculture* the chief Canadian industry. Wheat-growing for export, however, is now confined almost entirely to the Prairie Provinces; dairying and stock-raising are common in every province of the Dominion; and the culture of the hardier fruits, such as apples, is successfully carried on in eastern Canada and British Columbia.

II. FORESTS

Much of the wealth of Canada lies in her forests, of which there are several distinct regions. One of these is known as the *southern forest region.* This extends from western Ontario to the Gulf of St. Lawrence and the Atlantic Ocean, and stretches northward from the boundary to the 50th parallel in western Ontario, and to the 49th parallel in central Ontario and in Quebec. The principal trees of this forest region are maple, beech, ash, birch, pine, spruce, tamarack, and cedar.

North of the southern forest is the *northern densely-wooded forest region.* This stretches from the Gulf of St. Lawrence across the continent to the Rocky Mountains, and



Agricultural areas—grain, fruit, cattle, horses, sheep.

northward from the southern forest region and the prairies to the 53rd parallel at Hudson Bay; farther west its northern limit is beyond the 60th parallel. In this region the principal forest trees are the spruce, Banksian pine, tamarack, and poplar.

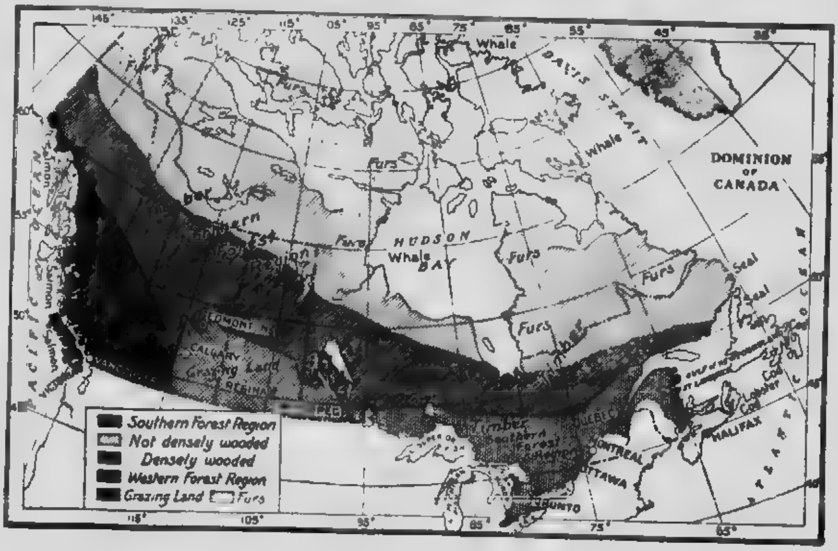
North of the densely-wooded northern forest region is the *northern forest area, not densely wooded.* East of Hudson Bay, this reaches as far north as latitude 58°, and west of the Bay it extends in a north-west direction to the delta of Mackenzie River, where trees a foot in diameter are found. Throughout this region, the hardy trees, such as the spruce, larch, balsam-poplar, and canoe-birch occur, although their growth is stunted.

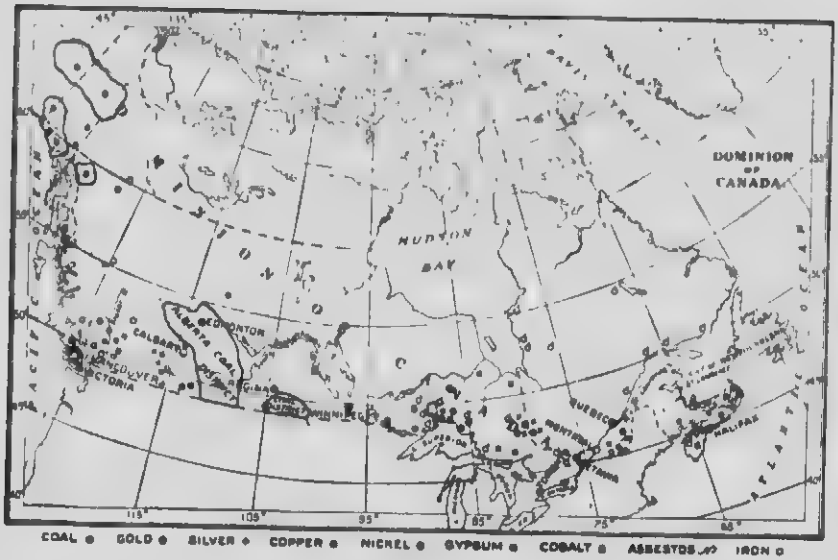
Another forest region is the *Cordilleran* or *western forest region.* This extends from the Rocky Mountains to the Pacific Ocean. In this region, the common forest trees are Douglas Fir, British Columbia cedar, black pine, and white spruce.

In Canada, *lumbering* is second in importance only to agriculture. In addition to supplying the ever increasing home market, the Dominion carries on a large export trade with Great Britain and the United States.

III. MINERALS

Nearly all the minerals of commercial value are found in Canada. In order of economic value, the most important produced in Canada are coal, copper, nickel, silver, gold, lead, cement, and asbestos. The mining regions lie chiefly in the east and in the extreme west. Coal is produced principally in Northern Nova Scotia and Southern British Columbia. Copper is mined in British Columbia and Northern Ontario. The world may be said to obtain its supply of nickel from Northern Ontario. Almost all the silver mined in Canada comes from British Columbia and





Mineral areas.

Northern Ontario. Gold is obtained from the Yukon Territory, British Columbia, and Nova Scotia; lead, chiefly from British Columbia. All the provinces have deposits of limestone and clay from which cement is manufactured. Asbestos, from which fireproof articles are made, is mined chiefly in the Eastern Townships of the Province of Quebec.

IV. FISHERIES

The most valuable fish for commercial purposes are found in shallow, cold waters where food is abundant. There are, in the world, three great salt-water centres in which these conditions are found. One of these centres is in the North Sea and the Atlantic Ocean east of Iceland. It is frequented by British, Norwegian, Danish, and other European fishermen. The other two lie adjacent to the coasts of Canada — one in the North Atlantic Ocean, and the other in the North Pacific.

The Arctic current brings to the shallow waters of the coast of Eastern Canada vast quantities of algæ upon which the fish feed, and the facilities afforded by the 10,000 miles of coast for the taking and curing of fish and the canning of lobsters, render the North Atlantic fishing centre the most important in the world. The *cod* and *lobster* fisheries are the most valuable, although the *herring*, *mackerel*, *salmon*, and other fisheries are also important. All together, over 60,000 Canadians besides British, French and United States fishermen find employment in this fishing centre.

In the Pacific centre, the 8,000 miles of coast waters of British Columbia abound in excellent fish. At present, *salmon* and *halibut* are the only kinds utilized on a large scale.

The numerous fresh-water lakes and rivers of Canada abound in valuable food-fish, and many persons find profitable employment in the capture and transportation of these to centres of population in Canada and the United States.

Canada has also a great storehouse of wealth in the teeming waters of Hudson Bay and her northern seas. No doubt, when railway facilities are provided, so that the fish may be brought to market in good condition, this will prove another valuable fishing centre.

The Canadian government expends large sums in preventing the capture of fish during the spawning season and in establishing hatcheries in which fish culture is used to supplement natural reproduction.

TRADE AND COMMERCE

The vast resources of the Dominion are gradually being developed and, consequently, the trade and commerce of the country are correspondingly increasing. Seven eighths of the trade is with the two great English-speaking countries, the United Kingdom and the United States.

To the United Kingdom are exported *agricultural products*, as grain, particularly wheat and oats, and apples; *animals and their products*, as cattle, bacon, cheese, butter, and furs;

products of the fisheries, as canned salmon; *products of the forest*, as lumber and timber, *products of the mine*, as copper, nickel, and asbestos; and *manufactures*, as flour, agricultural implements, leather, etc.

The principal exports to the United States are *animals and their products*, as sheep, hides, skins and furs; *products of the fisheries*, as codfish, haddock, mackerel and lobsters; *products of the forest*, as lumber, shingles, laths, pulp-wood, and wood pulp; *products of the mine*, as gold, silver, copper, coal, nickel, and asbestos.

Kicking Horse Pass, British Columbia

The chief imports from the United Kingdom are woollen goods, silks, and articles manufactured from iron and steel. From the United States Canada receives coal, leather, Indian corn, tobacco, raw cotton and fruits, and articles manufactured from iron and steel.

XXIX. CANADA AS A WHOLE; TRANSPORTATION

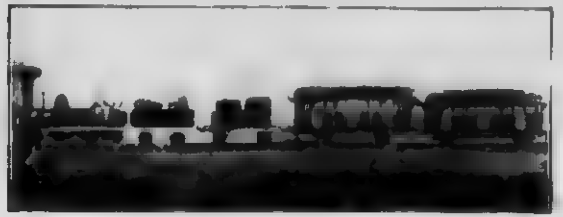
Canada is well supplied with means of transportation. There will soon be three transcontinental lines of railway through Canadian territory. These are the Canadian Pacific, completed in 1885; the Canadian Northern and the Grand Trunk Pacific, both under construction now (1910). Canada has also an unexcelled system of water communication. The River St. Lawrence and the Great Lakes make an unbroken line of transportation from Port Arthur and Fort William to Montreal, a distance of nearly 1,300 miles. This can be used by ocean-going vessels drawing fourteen feet of water.

Railways. The main line of the Canadian Pacific Railway, 3,387 miles in length, spans the continent from ocean to ocean. It extends from St. John, New Brunswick, westward through the State of Maine and the province of Quebec to Montreal. Thence it pursues its westward course across Northern Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia, passing through North Bay, Fort William, Winnipeg, Brandon, Regina, Calgary, and over the Kicking Horse Pass at an elevation of a mile above sea-level, to its terminus in Vancouver. This line shortens the journey between Liverpool and China by 1,000 miles and gives an alternative route to Australia as short as that by the Suez Canal

The Canadian Northern, when completed, will provide a second transcontinental route. Its eastern terminals will be St. John, in New Brunswick, and a port in Nova Scotia. Proceeding westward it will cross the St. Lawrence at Quebec, and pass through Northern Ontario to Fort William. From that point it will run, by its present line, through Winnipeg and Portage la Prairie, to Lloydminster and Edmonton. Thence it will proceed through the Yellowhead Pass, across the Rocky Mountains, and *via* the North Thompson and Fraser rivers, to New Westminster and Vancouver.

Victoria Bridge, over St. Lawrence River, Montreal.

The Grand Trunk Pacific will make a third route across the continent in Canada. Its eastern terminal is Moncton; but, with running powers over the Intercolonial, Halifax will become its real eastern terminal. From Moncton it runs north-westward through New Brunswick, passing through Chipman and Edmundston on its way to the St. Lawrence River. After crossing the St. Lawrence at Quebec City, it proceeds westward through Quebec and Northern Ontario to Winnipeg. From Winnipeg it runs in an almost straight line to Edmonton, and crosses the Rocky Mountains through the Yellowhead Pass to its western terminus at Prince Rupert.



First railway train in Canada.

There are two other important railway systems in Canada — the *Grand Trunk* and the *Intercolonial.*

The *Grand Trunk* runs from Portland in the State of Maine westward through Quebec and Ontario to Chicago, Illinois — a distance of 1,138 miles, passing Montreal, Kingston, Toronto, Hamilton, London and Sarnia on its way. It has branch lines to almost every place of importance in Ontario.

The main line of the *Intercolonial* runs from Halifax north-westward across Nova Scotia and New Brunswick, turning south-westward through Quebec till it reaches Montreal — a distance of 840 miles. It passes through Truro, Amherst, Moncton, Campbellton, Rimouski, Levis, and St. Hyacinthe.

Water-ways. Canada's water-ways are unequalled by those of any other country. The Great Lakes between Canada and the United States, with their connections, form by far the best inland system of water transportation in the world. These lakes alone contain more than half the fresh water of the globe.

Canals. The St. Lawrence River, the great water-way of Canada, is obstructed at certain places by rapids, up which vessels cannot pass. To overcome this the Canadian government has, at great expense, constructed canals at Lachine, Soulanges, Cornwall, and other places. The locks on the St. Lawrence system of canals are 270 feet long, 45 feet wide, and will admit vessels drawing fourteen feet of water. Vessels pass between lakes Erie and Ontario through the Welland Canal.

To overcome the rapids on the St. Mary's River, which connects lakes Superior and Huron, the Sault Ste. Marie Canal, 1¼ miles long, has been constructed on the Canadian side of the river. This has a lock 900 feet in length, 60 feet in width, and the water is 20¼ feet deep at the lowest known level of Lake Superior. A canal has also been constructed on the Michigan side of the river by the United States.

Canals are sometimes constructed to shorten a water route. Thus, the distance from Kingston to Ottawa by way of the St. Lawrence and Ottawa rivers is little short of 300 miles; but by way of the Rideau Canal, which passes through the counties of Frontenac, Leeds and Grenville, it is only 126 miles, of which but 29 miles had to be artificially constructed. The remaining 97 miles are formed by the Rideau River, Rideau Lake, and other connecting bodies of water.

The Trent Valley Canal, now under construction, will reduce the distance by water between Georgian Bay and Lake Ontario to 200 miles, of which 20 miles will be canal and 180 miles river and lake navigation.

From this we see that the products of Canada can be readily carried by rail or water to the seaports of the Dominion, where they are loaded on ocean-going vessels to be distributed to various parts of the world. The principal seaports of Canada are *Halifax*, *St. John*, *Quebec*, and *Montreal* in the east, and *Vancouver* in the west.

XXX. CANADA AS A WHOLE; PEOPLES

Indians. When white men first came to Canada, Indians occupied the country from ocean to ocean. To-day, while a few Indians are to be found in every province, the greater number are confined to Quebec, Ontario, and the western provinces. At present the Indian

Straits of Canso. A route for vessels in coasting trade population of the Dominion is less than 100,000, and the Indians and half-breeds together number about 125,000.

Eskimos. In the far north, in the regions bordering on the Arctic Ocean, there are a peculiar people who dress in skins and live on fish or meat; these are *Eskimos*. Their name implies "eaters of raw flesh." They never penetrate inland and thus avoid coming in contact with Indians with whom they have always been at enmity. In summer they wander about in search of their food. In winter they live in snow or ice-huts, subsisting on meat they have stored for winter use or which they may obtain at this season.

French. Soon after the discovery of America by Christopher Columbus, in 1492, the French, attracted by the excellent fishing along the coasts of what is now Eastern Canada, and by the profitable trade in furs which sprang up with the Indians, took possession of Nova Scotia and the valley of the St. Lawrence. To-day their descendants number nearly one-third of the entire population of the Dominion.

British. When the country became a possession of the United Kingdom, in 1763 and later after the American Revolutionary War, settlers of British origin migrated from both the United Kingdom and the United States in large numbers, to the Maritime Provinces, the St. Lawrence valley, and the districts north of lakes Ontario and Erie. This tide of immigration has continued ever since, until now the people of British origin number almost two thirds of the population. The small remaining fraction of the people is made up of immigrants from many European countries, those of German origin predominating. Scattered throughout the Dominion are Chinese and Japanese, who are becoming quite numerous in British Columbia.

A Blackfoot encampment.

Divisions of Canada. Canada consists of nine provinces: Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, Manitoba, Saskatchewan, Alberta, and British Columbia; an organized territory, the Yukon; and a vast area, known as the North-West Territories. This area consists of what was formerly called Mackenzie, Keewatin and Ungava.

XXXI. CANADA AS A WHOLE; GOVERNMENT

It is important for a Canadian citizen to know something of the government of the country in which he lives. At the head of our affairs is King George V, the Sovereign of the whole British Empire. In Canada he is represented by the Governor-General. In all matters relating to local affairs, Canadians enjoy full powers of self-government.

Canada is governed on what is known as the Federal System. It is made up of a number of provinces which have federated; that is, entered into a partnership for mutual advantage, while retaining their own individual independence in local provincial affairs. When the old provinces — Upper Canada, Lower Canada, Nova Scotia, and New Brunswick — decided on Confederation, they freely gave up some of their own powers into the hands of a central government in which they were all represented. But they retained other powers in their own hands; so that Canada is in reality governed by a number of Provincial Legislatures, each dealing with the local affairs of its own province, and by a central or Dominion Parliament at Ottawa, which deals with matters pertaining to the welfare of the Dominion as a whole.

The Governor-General, the Senate, and the House of Commons together constitute the Parliament of Canada. The Senate is not elected, but is made up of members appointed by the Governor-General, acting on the advice of his Cabinet. Senators hold their positions for life, unless they resign, or become disqualified. Each Senator must be a British subject, must live in the province he represents, and must own property to the value of at least $4,000.

The members of the House of Commons are elected by the people. They serve for a term of five years, unless the House is dissolved by the Crown in the meantime. Each member must be a British subject. The various provinces of the Dominion are represented in proportion to their population. The representation of Quebec is fixed at sixty-five members; after each decennial census the number of members of parliament for each province shall bear the same ratio to its population as sixty-five does to the population of Quebec. Any bill may, and all *money* bills must, originate in this House.

Parliament Buildings, Ottawa.

The Cabinet, or Executive Council, practically controls the affairs of the country. The head of the Cabinet is called the Premier or Prime Minister, and he is for the time practically the ruler of Canada. The members of the Cabinet are the heads of the departments of the public service and are known as Ministers. The Minister is named after the department over which he presides, as the Minister of Public Works, of Justice, of Militia and Defence, etc.

The seat of the Government of Canada is at Ottawa, which is, therefore, the Capital of the Dominion. Here are the Parliament Buildings, the Departmental Buildings, and Rideau Hall, the residence of the Governor-General.

The Parliament of Canada has jurisdiction over the public debt, trade and commerce, raising money by any system of taxation, postal service, census, militia, navigation, currency and coinage, banking, weights and measures, interest, bankruptcy, and insolvency, patents of inventions, copyrights, management of penitentiaries, criminal law, but not civil law, and all classes of subjects not expressly stated as coming under the authority of the provinces. The *administration* of the law is in the hands of each province and is intrusted to judges appointed by the Executive Council of the Parliament of Canada, and to Magistrates appointed by the Executive Councils of the several provinces.

Province. A province in Canada is a division of the Dominion with power to make and amend its own laws; to manage and to sell its public lands and timber; to establish and maintain public reformatories, prisons, hospitals, charities, etc.; to control its municipal institutions; to administer justice; to direct its educational affairs; to borrow money on the credit of the province; to regulate the liquor traffic, etc.

Territory. A territory is a subdivision of the Dominion which is ruled by the central government at Ottawa. This government appoints officials whose duty it is to transact the business which, in the case of a province, is carried on by the provincial authorities. The Executive at Ottawa may, however, delegate certain power to local authorities, as is the case in the Yukon Territory.

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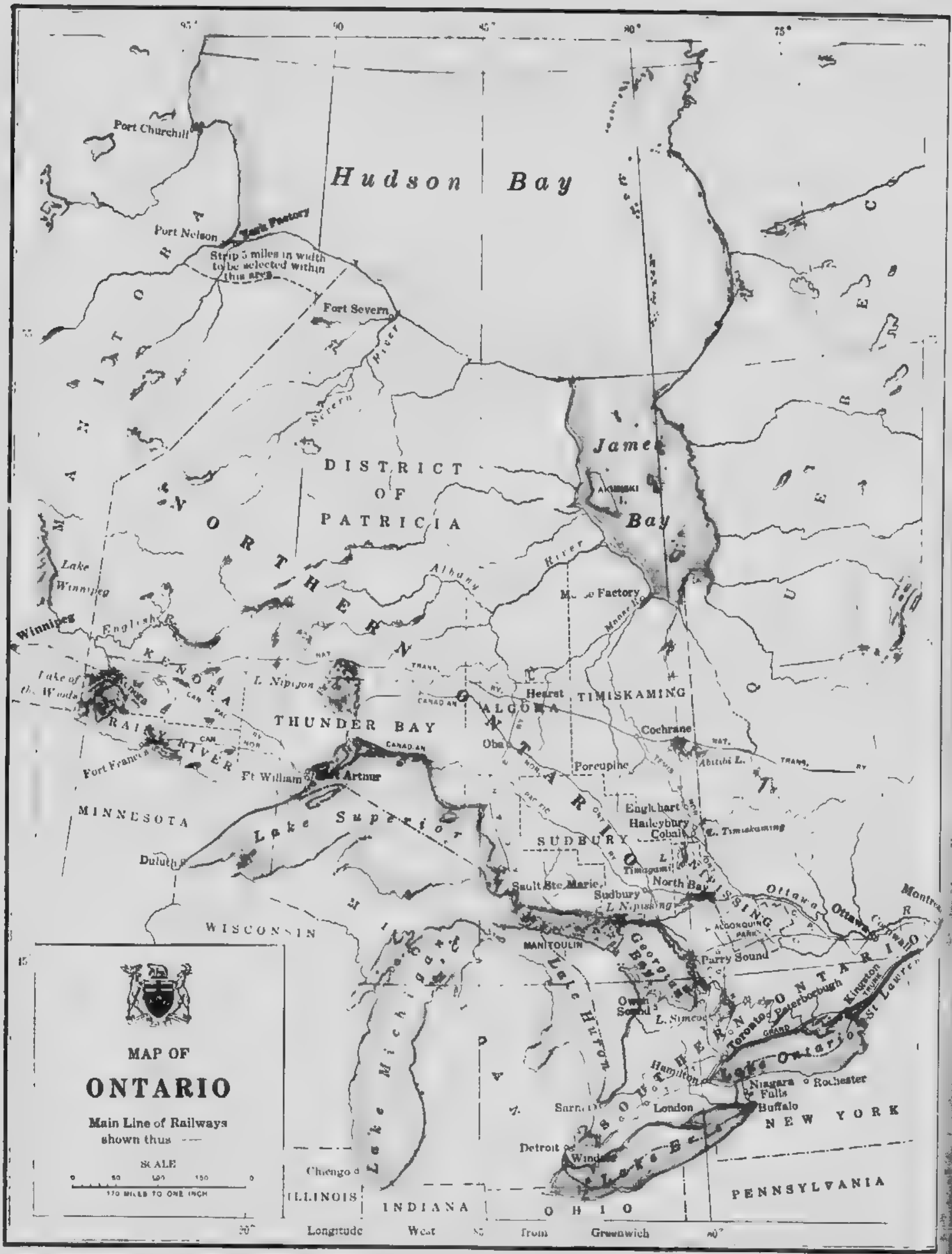

MAP OF
ONTARIO
Main Line of Railways shown thus
SCALE
0 50 100 150
170 MILES TO ONE INCH
Longitude West from Greenwich
Hudson Bay
Port Churchill
Port Nelson
York Factory
Strip 5 miles in width to be selected within this area
Fort Severn
Severn River
MANITOBA
DISTRICT OF PATRICIA
NORTHERN ONTARIO
James Bay
AKIMISKI I.
Albany River
Moose Factory
Moose R.
Lake Winnipeg
Winnipeg
English R.
KENORA
Lake of the Woods
RAINY RIVER
Fort Frances
L. Nipigon
THUNDER BAY
Ft William
Port Arthur
Lake Superior
MINNESOTA
Duluth
WISCONSIN
ALGOMA
Hearst
TIMISKAMING
Cochrane
Abitibi L.
Oba
Porcupine
Englehart
Haileybury
Cobalt
L. Timiskaming
SUDBURY
L. Timagami
NIPISSING
North Bay
Sault Ste. Marie
Sudbury
L. Nipissing
Ottawa R.
Ottawa
Montreal
Cornwall
ALGONQUIN PARK
MANITOULIN
Georgian Bay
Parry Sound
Lake Huron
Lake Michigan
MICHIGAN
Owen Sound
L. Simcoe
Toronto
Peterborough
Kingston
St Lawrence
SOUTHERN ONTARIO
Lake Ontario
Hamilton
Niagara Falls
Rochester
Buffalo
NEW YORK
London
Sarnia
Detroit
Windsor
Lake Erie
Chicago
ILLINOIS
INDIANA
OHIO
PENNSYLVANIA
QUEBEC
CANADIAN PACIFIC
CANADIAN NORTHERN
NAT. TRANS. RY.
GRAND TRUNK
95°
90°
85°
80°
75°

XXXII. ONTARIO

Position. Ontario stretches from the Ottawa River in the east to Manitoba in the west, about 1,000 miles; and from Lake Erie on the south to Hudson Bay on the north, about 1000 miles. It includes the upper part of the basin of the St. Lawrence north of the Great Lakes, and also all the vast region lying north of the height of land which separates the streams flowing into Lake Superior from those flowing into Hudson Bay, as far west as the province of Manitoba.

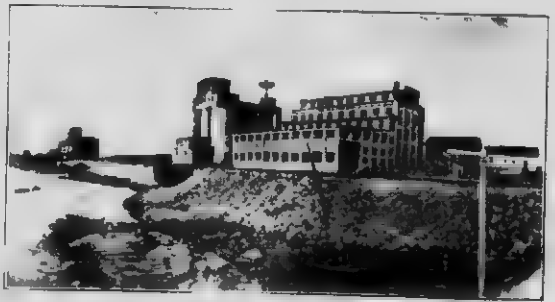
Spraying fruit trees in the Niagara District.

Area and Extent. Ontario ranks second in size among the provinces, Quebec being first and British Columbia third. Its area is about 407,000 square miles.

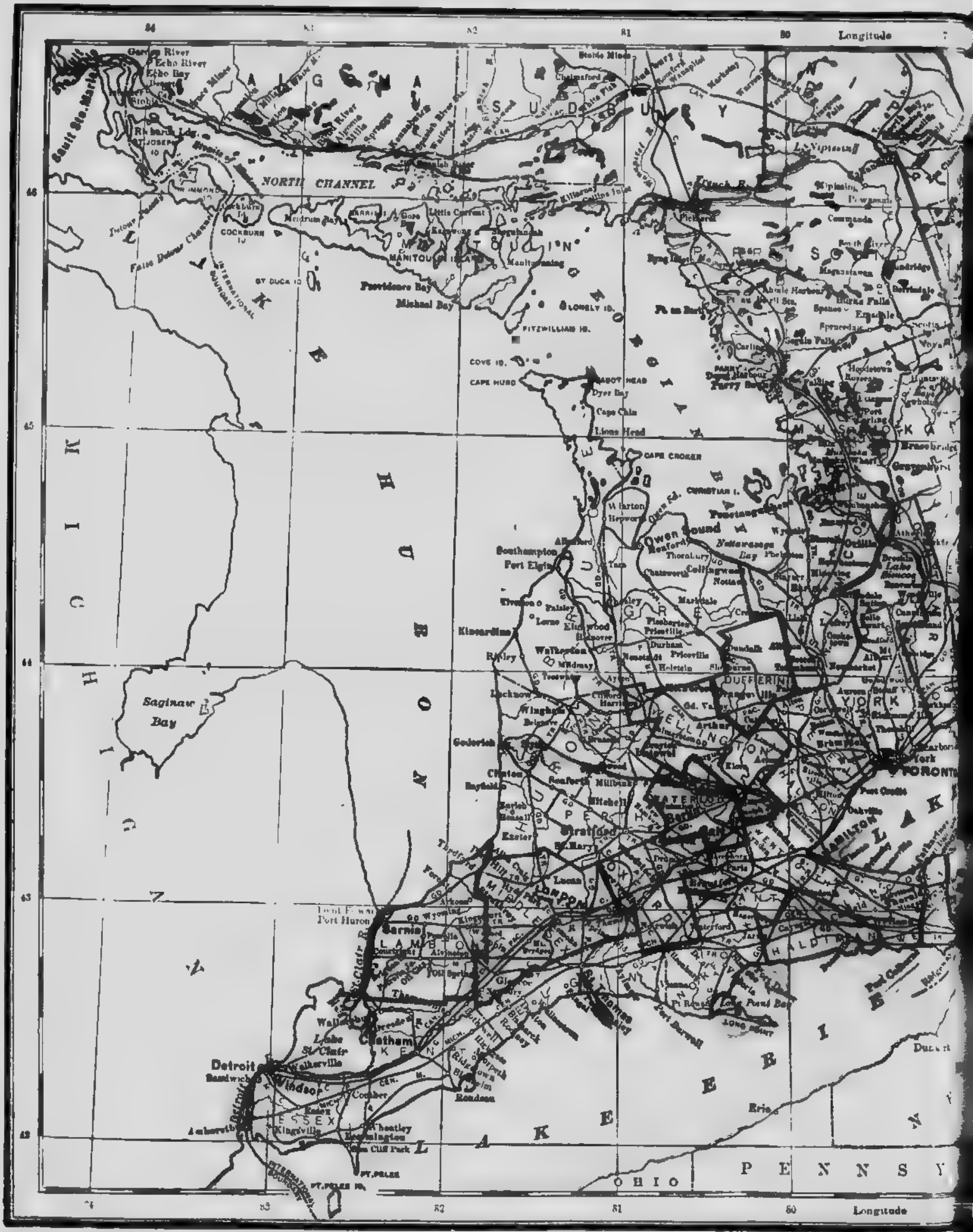
Surface Features. Ontario consists of two great subdivisions:—(1) The low-lying land of the St. Lawrence Valley, often spoken of as *Southern Ontario*, and (2) *Northern Ontario*, including the part of the Laurentian Plateau lying within the province and the clay belt to its north.

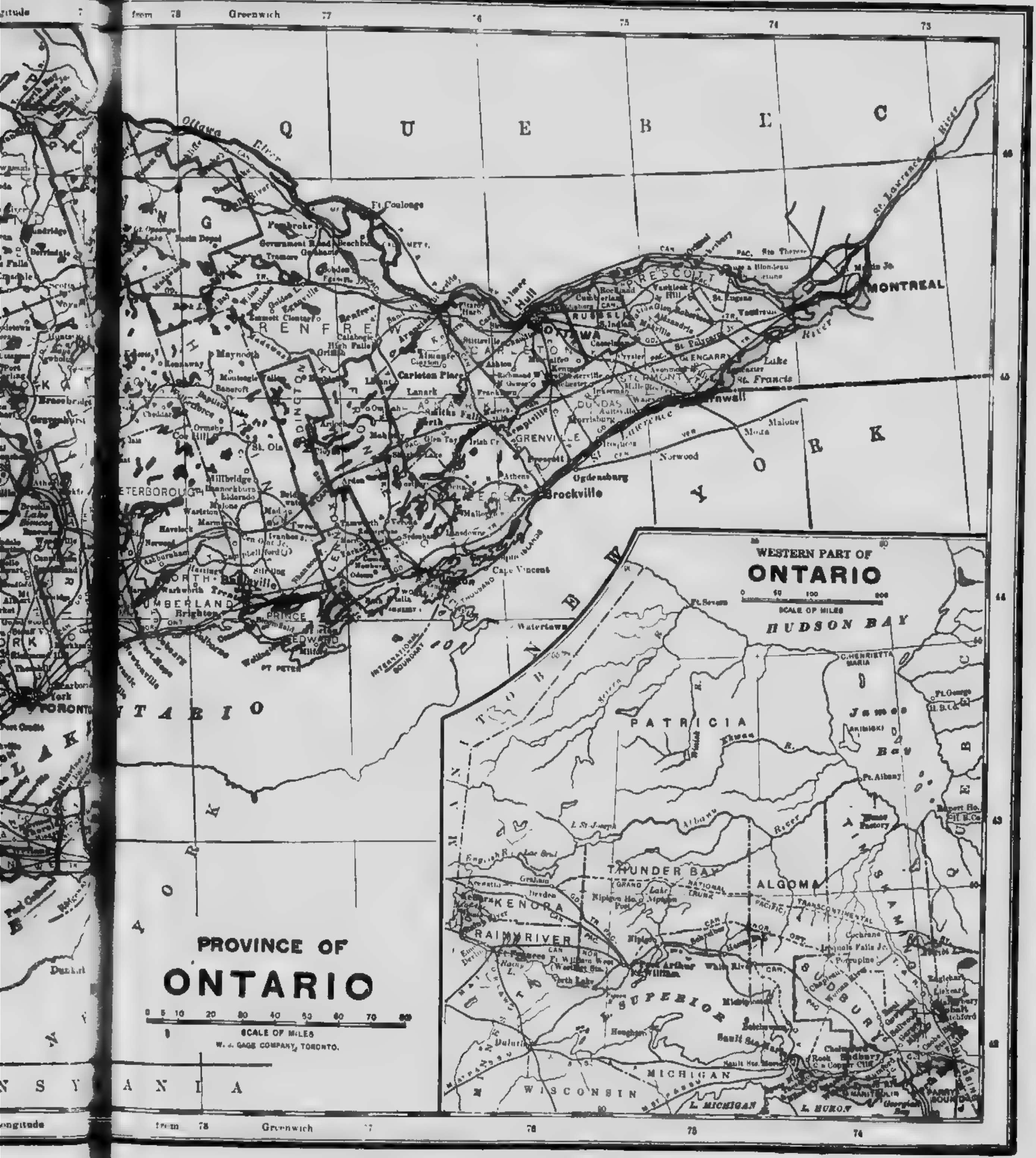
Southern Ontario is a triangular-shaped peninsula lying south of Lake Nipissing, between lakes Huron, Erie, and Ontario, and the St. Lawrence and Ottawa rivers. Nearly all this region is a fine farming country. The land is generally of an undulating character, the soil being clay or a clay loam unexcelled for natural fertility. The south-western part lying between the Niagara escarpment and lakes Erie and Huron is an unbroken plateau of great fertility, often spoken of as the "Garden of Ontario."

Northern Ontario. The part of Northern Ontario within the Laurentian Highland is of an entirely different character. It is a land of worn-down rocks, with fertile valleys, peaty swamps or muskegs, and vast numbers of small lakes. Between the Laurentian rock region and Hudson and James bays the underlying rocks are limestone, and the surface is clay, forming the Great Clay Belt, an area of 16 millions of acres of land, nearly all of which is well adapted for cultivation. It is heavily timbered with pine, spruce, and poplar. This section is of much lower altitude than the rocky country to the immediate south. A line drawn due south from James Bay would rise to about 1,000 feet in the Laurentian area; then it would slope gradually down to the level of Lake Ontario. This region of greatest altitude runs nearly east and west through Northern Ontario at an average distance of 60 miles from Lake Superior, and forms the *divide* for the drainage of the country. Owing to the warmer climate



Flour-mill at Lake of the Woods.


Longitude
84
83
82
81
80
Sault Ste. Marie
Garden River
Echo River
Echo Bay
St. Joseph Id.
Richards Ldg.
A L G O M A
Thessalon
Blind River
Algoma Mills
Spanish River
Sudbury
Chelmsford
Stobie Mines
S U D B U R Y
L. Nipissing
Nipissing
Powassan
Commanda
French R.
Pickerel
Byng Inlet
P A R R Y   S O U N D
Magnetawan
Burks Falls
Emsdale
Sprucedale
Parry Sound
Parry Harbour
M U S K O K A
Bracebridge
Gravenhurst
NORTH CHANNEL
False Detour Channel
Drummond
Cockburn Id.
Meldrum Bay
Gore Bay
Little Current
Kagawong
Manitoulin Island
M A N I T O U L I N
Manitowaning
Providence Bay
Michael Bay
St. Duca Id.
International Boundary
Lonely Id.
Fitzwilliam Id.
G E O R G I A N   B A Y
Cove Id.
Cape Hurd
Cabot Head
Dyer Bay
Cape Chin
Lions Head
Cape Croker
Christian I.
Wiarton
Hepworth
Owen Sound
Meaford
Thornbury
Collingwood
Nottawasaga Bay
Penetanguishene
Orillia
Lake Simcoe
Southampton
Port Elgin
Tiverton
Paisley
Kincardine
Lorne
Elmwood
Hanover
Walkerton
Mildmay
Ripley
Lucknow
Wingham
Goderich
Clinton
Bayfield
Seaforth
Mitchell
Exeter
Stratford
St. Marys
Lucan
London
Durham
Priceville
Markdale
Flesherton
Holstein
Dundalk
Shelburne
G R E Y
D U F F E R I N
W E L L I N G T O N
Arthur
W A T E R L O O
Berlin
Galt
Y O R K
Aurora
Newmarket
Brampton
York
Toronto
Port Credit
Oakville
Hamilton
Brantford
Paris
Woodstock
O X F O R D
H U R O N
P E R T H
M I D D L E S E X
L A M B T O N
E L G I N
N O R F O L K
H A L D I M A N D
Port Colborne
Long Point Bay
Port Burwell
Port Rowan
Fort Edward
Port Huron
Sarnia
Wyoming
Petrolia
Alvinston
Arkona
Thedford
Forest
Courtright
St. Clair
Wallaceburg
Dresden
Chatham
Lake St. Clair
K E N T
Ridgetown
Blenheim
Rondeau
Detroit
Walkerville
Windsor
Sandwich
Amherstburg
Essex
Comber
E S S E X
Kingsville
Wheatley
Leamington
Pt. Pelee
Pt. Pelee Id.
L A K E   E R I E
L A K E   H U R O N
M I C H I G A N
Saginaw Bay
O H I O
P E N N S Y
Erie
Dunkirk
Longitude
46
45
44
43
42



PROVINCE OF
ONTARIO
SCALE OF MILES
W. J. GAGE COMPANY, TORONTO.
Longitude
from 78 Greenwich 77
QUEBEC
NEW YORK
ONTARIO
PENNSYLVANIA
RENFREW
CARLETON
RUSSELL
PRESCOTT
GLENGARRY
STORMONT
DUNDAS
GRENVILLE
LANARK
NORTHUMBERLAND
PRINCE EDWARD
PETERBOROUGH
Ottawa River
St. Lawrence River
MONTREAL
OTTAWA
Hull
Pembroke
Renfrew
Arnprior
Carleton Place
Smiths Falls
Perth
Brockville
Prescott
Ogdensburg
Cornwall
St. Francis
Norwood
Malone
Watertown
Cape Vincent
Kingston
Belleville
Brighton
Picton
Toronto
Maynooth
Bancroft
Ft. Coulonge
THOUSAND ISLANDS
INTERNATIONAL BOUNDARY
WESTERN PART OF
ONTARIO
SCALE OF MILES
HUDSON BAY
James Bay
PATRICIA
THUNDER BAY
ALGOMA
KENORA
RAINY RIVER
SUDBURY
TIMISKAMING
MANITOBA
MINNESOTA
WISCONSIN
MICHIGAN
L. SUPERIOR
L. MICHIGAN
L. HURON
Ft. Severn
Ft. Albany
Moose Factory
Port Arthur
Ft. William
Sault Ste. Marie
Cochrane
Porcupine
Cobalt
Haileybury
New Liskeard
Sudbury
Nipigon
White River
Duluth
Parry Sound
NATIONAL TRANSCONTINENTAL

due to its low altitude, the clay belt will become, when cleared, a fine region for stock-raising and dairying.

Drainage. The principal watershed of the province enters it from Quebec about 40 miles north of Lake Timiskaming and, running westward, sweeps round the shore of Superior at a distance of about 60 miles from the lake, but in places it is much nearer. Portions of two great Basins are included in Ontario: that of the St. Lawrence with its tributary, the Ottawa; and that of the rivers flowing into Hudson and James bays.

The rivers draining the Hudson Bay slope of Ontario are in general shallow and rapid until they flow through the low-lying land around the bay. The principal rivers draining the north-western part of this slope are *Rainy River*, which discharges itself into Lake of the Woods, and *English River*, which is the chief tributary of the Winnipeg River.

The Lake Superior part of the St. Lawrence Basin is drained by the *Pigeon River*, a short stream forming part of the boundary between Canada and the United States; the *Kaministikwia*; the *Nipigon*, a rapid river draining Lake Nipigon; and many other short, rapid streams. Flowing into Lake Huron are the *Spanish River*, the outlet of many small lakes; and the *French River*, the outlet of Lake Nipissing.

The rivers of Southern Ontario may be classified as follows: Those flowing (1) into the Ottawa River; (2) into Lake Ontario; (3) into Lake Erie; (4) into Lake St. Clair; (5) into Lake Huron; (6) into the southern part of the Georgian Bay. The chief of the rivers entering Lake Ontario is the *Trent*. Through this river, and the chain of lakes of which it is the outlet, runs the Trent Valley Canal. The *Grand*, the *Thames*, and the *Severn* which is the outlet of Lake Simcoe, are the principal rivers that enter Lake Erie, Lake St. Clair, and the Georgian Bay, respectively.

THE GREAT LAKES AND ST. LAWRENCE RIVER

Lake	Length Miles	Average Breadth Miles	Area, Sq. Miles	Elevation of Surface Above Sea Level Feet	Depth of Water Feet
Superior . .	420	80	31,800	602	1,000
Huron . .	270	70	23,200	581	1,000
Michigan .	350	60	23,000	581	700
St. Clair .	25	25	445	576	16
Erie	250	38	10,000	572	200
Ontario . .	190	55	7,260	246	600

Lake Superior, situated in the upper part of the basin of the St. Lawrence River, is the largest body of fresh water in the world. Its shores are bold, rocky and irregular, rising from 300 feet to 1,500 feet above the waters of the lake. The chief inlets on the Ontario side of the lake are Thunder Bay, Black Bay, Nipigon Bay, and Michipicoten Harbour. There are many small offshore islands which afford good harbourage.

The water is clear and cold, and is the home of great numbers of lake trout, whitefish, herring, and other fish. These are caught in great quantities by the local fishermen.

The main water supply to Superior comes from Lake Nipigon, which is 1,450 square miles in area, very deep, and a favourite resort of sportsmen. Another important feeder is the Kaministikwia which enters the lake at Fort William.

Lake Superior discharges its waters into Lake Huron by the St. Mary's River; it has a fall of 22 feet in three quarters of a mile. To overcome this obstruction to navigation there are two canals, one on the Canadian side and the other on the United States side.

The chief ports on the Canadian side are Fort William and Port Arthur, and on the United States side, Duluth, at the extreme western extremity of the lake. From the Canadian ports are shipped millions of bushels of wheat, brought by rail from the western provinces.

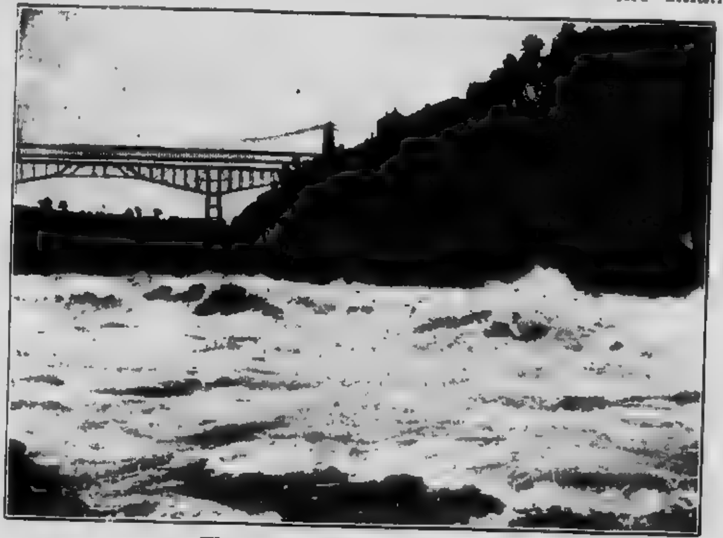
Lake Huron, including Georgian Bay. This lake lies along a part of the south-western border of the Laurentian Plateau. At the south its eastern shores are low, but at Goderich the land rises into bold cliffs which, broken occasionally by lower stretches, continue to Cabot's Head. The Bruce Peninsula and the long chain of Manitoulin Islands separate Georgian Bay from the main part of the lake. The eastern shores of the bay are low and rocky, but the north shore is high and bold, resembling that of Lake Superior. Between Manitoulin Island and the mainland is the North Channel, a picturesque sheet of water, with high, rocky bluffs along its north shore.

The waters are remarkably clear. Large quantities of trout and pickerel are caught and shipped to the cities of Ontario and the United States.

Lock at Sault Ste. Marie.

The chief ports on the main part of the lake are Goderich, Kincardine, and Southampton; on Georgian Bay, Wiarton, Owen Sound, Collingwood, Midland, and Depot Harbour. The striking feature of Georgian Bay is the many small islands, said to be 20,000 in number, which dot its waters. The suitability of these islands as summer resorts attracts a rapidly increasing number of visitors.

Toward its southern extremity, Lake Huron becomes narrow and discharges its waters through the River St. Clair. This river, 30 miles long, flows past Sarnia into Lake St. Clair—a small, shallow lake, with turbid waters. Through the lake a channel 16 feet deep and 300 feet wide, is kept open by dredging. The shores are low and in many places marshy. The waters of this lake are discharged into Lake Erie through the Detroit River, a stream about 32 miles long, which separates Windsor and Detroit.


The rapids below Niagara Falls.

Lake Erie is the shallowest of the Great Lakes, its average depth being about 57 feet. Its shores are low and fertile. The largest inlet on the Ontario side is Long Point Bay, lying north of Long Point Island. Not far from the western end of the lake is Point Pelée, and south of it is Pelée Island, noted for its vineyards. The lake supplies great quantities of herring, pike, and pickerel.

Lake Erie, during the season of navigation, is thronged with shipping. On the Canadian side the chief ports are Port Colborne, Port Dover, Port Stanley, and Rondeau; on the United States side are Buffalo, Cleveland, Toledo, Erie, and Sandusky.

The Niagara River, 33 miles in length, is the outlet of Lake Erie. In its course from Lake Erie to Lake Ontario it descends 326 feet. In less than five miles of its length the river falls 300 feet: 55 feet in the rapids above the Falls, 160 feet at the Falls, and 85 feet in the gorge below. The rapids terminate at Queenston, seven miles from the mouth of the river; here it becomes tranquil and is navigable by steamers from Lake Ontario.

Lake Ontario is the smallest of the Great Lakes. Its shores are comparatively low, the greatest elevation being 350 feet at Scarboro Heights. The principal inlets on the Ontario side are Burlington Bay at the western extremity of the lake, and the Bay of Quinte at the north-eastern end. The latter is formed by the County of Prince Edward, a peninsula to the south of this beautiful bay. This peninsula is now separated from the mainland by a canal without locks, 5⅛ miles long. This enables vessels to avoid the roundabout voyage in the open lake.

The waters of this lake abound in such food-fish as herring, trout, and pike. Among the many excellent harbours along its shores are Port Dalhousie, Hamilton on Burlington Bay, Toronto on Toronto Bay, Whitby, Port Hope, Cobourg, Belleville on the Bay of Quinte, and Kingston at the eastern extremity of the lake.

The waters of all the Great Lakes are subject to fluctuations in level similar to those observed in Lake Geneva and other Swiss lakes. This seiche (sāsh), as it is called in Switzerland, varies from a few inches to several feet, and is supposed to be due to local variation of atmospheric pressure. Further, the level varies with the amount of precipitation over the lake region. The effect, in this case, is not perceptible for a considerable time after the precipitation to which it is due.

St. Lawrence River. Since the early part of the sixteenth century the St. Lawrence River has been a highway into the interior of this continent. By the treaty of 1873 between Great Britain and the United States, its waters are open for ever to international commerce.

Its volume, its rapids, its canals, its importance in our system of inland navigation, and its beauty and majesty throughout the varying scenes of its long course, make it one of the world's great rivers.

The shores of Lake Ontario narrow as Kingston is approached, and a little below that city the St. Lawrence channel, some twelve miles wide, is fairly entered. Between Gananoque and Brockville the river passes through an island labyrinth some forty miles in length, known as "The Thousand Islands." Their number, their picturesqueness, and their quaint beauty attract many visitors each summer. Below Prescott the river narrows, the stream quickens, and there is a fierce rush of waters down the Long Sault. Then it widens out into Lake St. Francis. Down the Cedars and the Cascade Rapids, through Lake St. Louis and past the mouth of the Ottawa, the river hastens to enter upon its headlong rush through the treacherous Lachine Rapids just above Montreal.

Hundreds of streams, some of them great rivers coming from far regions, swell the volume of the Lower St. Lawrence. Islands of many sizes and forms break its broad, blue expanse It grows wider and wider until its banks fade away on opposite horizons and its waters mingle with those of the Atlantic Ocean.

Since the days of Cartier every island, cape, and bay on this high-road has its story to tell of exploration, of struggles between opposing nations, of hardships bravely borne by pioneers, of the incoming of people from many lands, and the outgoing of the wealth reaped from field and forest and river.

Climate. South-western Ontario, owing to its latitude and to the modifying influence of the surrounding Great Lakes, has a comparatively mild climate. Neither the heat of summer nor the cold of winter is as extreme as in parts of North America farther south. The air is more humid than in regions beyond the influence of these lakes. Steady winter rarely begins until about Christmas; spring, toward the end of March or the beginning of April. Northward the climate becomes more continental until the Highlands of Ontario are reached. Here the elevation tempers the summer heat, but the winters are severe, the maximum degree of cold being north of Lake Superior, at White River. Abundance of snow and the frozen lakes and rivers form excellent roads for the transportation of the products of the chief industries, lumbering and mining. When once the Great Divide is reached, and the land begins to slope toward Hudson Bay, the climate begins to moderate, until, in the clay belt, the winters are said to be comparatively temperate. The average rainfall throughout Ontario varies from 30 to 40 inches a year.

Kingston.

Population. Many of the people of Ontario are descendants of the United Empire Loyalists, who by their energy brought the wilderness under cultivation. There are a number of French-speaking people in Northern Ontario, in the eastern counties, and also in Essex. Germans and their descendants are found especially in Waterloo County, and other nationalities are scattered throughout the province. The English-speaking peoples are, however, in the vast majority.

XXXIII. RESOURCES AND INDUSTRIES OF ONTARIO

AGRICULTURE

Grain Growing. Owing to the ease with which land can be tilled and grain grown on the great central plain of Canada and the United States, as well as in other parts of the world, the Ontario farmer cannot now grow grain profitably for exportation. He produces, however, large quantities of wheat, oats, barley, peas, etc., for home consumption. The progressive farmer finds it more profitable to feed his coarse grain, root and fodder crops to his live stock. He produces butter and cheese, fruit, meat and poultry, eggs for the British market, and in many parts of the province he breeds high-class stock. In this way he receives a better cash return, and the land is less exhausted than by grain-growing alone. Hence, dairying, stock-raising, and fruit-growing have become the chief industries on the Ontario farm.

Interior of a sanitary stable.

Dairying. This is one of the foremost branches of industry in Ontario. From this province more cheese is exported than from the whole of the United States. It is sent chiefly to Great Britain. The cheese is made under the factory or co-operative system, and not in the homes of the farmers. These factories are managed by men who have, for the most part, been trained either in the Dairy Schools at Guelph and Kingston, or by Government instructors who travel through the province.

During a part of the year a number of the cheese factories manufacture butter also, but as yet the factory system has not been adopted to the same extent in the case of butter as in that of cheese. These factories are situated in almost every part of the province. The counties of Oxford, Middlesex, and Perth, in western Ontario, and Peterborough, Hastings, Frontenac, Dundas, Stormont, Leeds, Lanark, Prescott, and Carleton, in eastern Ontario, are important centres.

Stock-Raising. For many years past Ontario farmers have been improving their stock by importing pure-bred animals; now they have also become exporters of live stock of all kinds to the United States and the North-West provinces. Stock-raising has grown to such magnitude that Ontario may justly claim to be the greatest breeding ground in North America.

Horses. Ontario is noted for the production of fine classes of horses. The counties of Huron, Perth, Wellington Middlesex, Kent, York, and Ontario are centres of this industry.

A fruit farm in southern Ontario.

Sheep. The climate of southern Ontario is an almost ideal one for successful sheep-raising. Here these animals are comparatively free from disease. The annual wool clip of the province is between four and five million pounds.

Pork and Bacon. The raising of bacon-hogs is an important industry. It is carried on chiefly in conjunction with dairying, since the by-products of the dairy may be employed as food for the pigs. The bacon and ham produced are exported chiefly to Great Britain. The principal seats of the pork and bacon-curing industries are at Toronto, Hamilton, Ingersoll, Brantford, London, Stratford, Peterborough, Ottawa, Collingwood, and Palmerston. These factories buy thousands of hogs each year from the neighbouring farmers.

Fruit-Growing. Apples constitute the staple fruit crop, and orchards are to be found everywhere throughout the older parts of the province. Except in the Ottawa valley, and in those parts of the Counties of Wellington, Grey, and Dufferin, where the elevation is unfavourable to winter apples, nearly all varieties are successfully grown. The counties bordering on Lake Erie and those at the south-west of Lake Ontario, from their low altitude and the ameliorating influences of the Great Lakes, produce the tender fruits, such as peaches, pears, and grapes. This district is known as the peach belt.

A silver mine at Cobalt.

Canning Industry. Associated with fruit growing is the canning industry. This enables the grower to find a ready market for his surplus product. In addition to the fruits already mentioned, large quantities of tomatoes, peas, and corn are canned. In the counties bordering on lakes Erie and Ontario, canneries are established at Simcoe, Aylmer, Dresden, St. Catharines, Hamilton, Picton, and many other places.

MINING

In Ontario almost all economic minerals are found, with the single exception of coal. The list includes such valuable metals as iron, copper, lead, silver, gold, and nickel.

Iron. In the country north of lakes Superior and Huron, and in Michipicoten Island, there are extensive ranges of iron-bearing rocks. To the west of Lake Superior, in the Rainy River District, there are very rich deposits of iron ore; and in the eastern counties of Frontenac, Hastings, and Haliburton considerable deposits occur. The chief works for smelting the ore are at Hamilton, Deseronto, Midland, and Sault Ste. Marie.

Nickel. Ontario furnishes the world with most of its supply of nickel. The mines are situated near Sudbury, in the Nipissing District. It is used in making cooking utensils, armour-plating, rust-proof electro-plated articles, and alloys for coins.

Silver. In the District of Nipissing, 100 miles north of North Bay, rich deposits of native silver are found in and about Cobalt, on the Timiskaming and Northern Ontario Railway. About 60 miles west and north of Cobalt, in the region of Gowganda, rich discoveries of this metal have been made recently.

Copper. The most important district for copper extends from Parry Sound to Lake Superior and northward to the Height of Land. At present the copper of Ontario comes almost entirely from the nickel-copper mines at Sudbury.

Salt. In the counties of Bruce, Huron, Lambton, Middlesex, and Essex, there are extensive deposits of salt of exceptional purity, from 1,100 to 1,700 feet under the surface. It is obtained by boring down to the salt-bed, forcing water into the opening, and pumping up the brine; the salt is then got from the brine by evaporation. The chief salt works are at Goderich, Clinton, and Windsor.

Petroleum. The counties of Kent and Lambton are the principal seats of the petroleum industry. There is a large refinery at Sarnia with a capacity of 60,000 barrels of crude oil a month.

Natural Gas. The principal gas-producing territory is in the counties of Welland, Haldimand, Essex, and Kent. The wells are from 500 to 1,100 feet deep. The gas is used both for fuel and light.

XXXIV. RESOURCES AND INDUSTRIES (*Continued*)

LUMBERING

Ontario was originally a tree-covered country, and the pioneer had to hew down and burn the forest to make a clearing for himself. The southern part had many valuable hardwood trees: walnut, hickory, elm, maple, oak, etc. These have nearly all disappeared. Northern Ontario is still a vast forest, chiefly of white pine and spruce. In this region, each winter, lumbermen fell the trees and cut them into logs to be drawn by teams of horses over the snow-covered ground to the banks of the nearest stream. The work of the lumberman is greatly assisted by the many rivers throughout Northern Ontario, down which the logs are floated in the spring to the saw-mills.

For the privilege of cutting down the trees upon these pine and spruce-covered areas, the lumbering companies pay large sums to the Provincial Government. The chief lumbering districts are on the Upper Ottawa, north of Georgian Bay, and west of Lake Superior. (Lumber is exported in very large quantities to Great Britain, the United States, South America, France, and other countries.)

A saw-mill and lumber-yard near Ottawa.

North of the Height of Land spruce grows abundantly. This is now much sought after for the production of pulp, out of which paper is made. Extensive pulp-mills are in operation at Sault Ste. Marie, Hawkesbury, Ottawa, Thorold, and Cornwall.

MANUFACTURES

The presence of abundant raw material, the possession of unlimited water and electrical power, and ample facilities for transportation, fit Ontario for becoming a great manufacturing centre. Already, in this respect, it stands first among the provinces of the Dominion, and in almost every town and city manufacturing industries are carried on. A list of articles manufactured would include almost every class of goods that has a place upon the Canadian market. The following is a brief summary of a few of the leading manufactures:

Oil-wells.

The Iron and Steel Industry. This industry, aided by protective duties and bounties granted by the Dominion government, is growing rapidly. The chief centres are Sault Ste. Marie, Collingwood, Midland, Hamilton, and Deseronto.

Machinery. The general development of manufacturing industries in Ontario has caused a great increase in the production of machinery. This is especially true of wood-working, mining and lumbering industries. The last mentioned requires a large amount of machinery, nearly all of which is now supplied by home manufacture. The principal centres are Galt, Toronto, Berlin, Hamilton, Brantford, and London.

Electrical Apparatus. On account of its numerous waterfalls, Canada presents an extending field for the development of electrical power. The use of electricity for lighting purposes is becoming very common in many localities, hence there is a growing demand for electrical machinery. The principal seats of manufacture are Peterborough and Toronto.

Heating Apparatus. Cooking ranges, furnaces, radiators, and stoves are manufactured not only for the Canadian, but also for the British and European markets. The principal centres of this industry are Hamilton, Toronto, Smiths Falls, Sarnia, Carleton Place, London, Guelph, Weston, Preston, Brantford, Woodstock, and Fort William.

Agricultural Implements. The manufacture of agricultural implements is an extensive industry. The chief centres are Toronto, Hamilton, Smiths Falls, Brantford, Paris, Ingersoll, St. Marys, Lindsay, Aurora, and Peterborough. The implements are sent to all parts of Canada and Europe, and also to Australia, New Zealand, and South America.

Carriages, Wagons. There are large factories at Oshawa, Orillia, Brantford, Chatham, Guelph, Brockville, Mount Forest, Alexandria, Woodstock, Markham, St. Thomas, Petrolia, etc. There is a steadily growing market for their products.

Paper. The principal seats of the paper-making industry in the Niagara district, are the towns of St. Catharines, Thorold, and Merritton. Book, writing, lithographic, and wrapping papers are made at one or other of these places. Other centres are Cornwall, Mille Roches, Georgetown, and Toronto.

Paper-making machine, showing the paper in a nearly finished state.

Furniture. The manufacture of furniture is another of the leading industries of the province. Large factories turn out high-grade furniture of all descriptions, made almost entirely from Canadian wood products. Among the chief centres of this industry are those of Stratford, Berlin, Preston, Newmarket, Guelph, Napanee, Ottawa, Woodstock, Elora, Waterloo, Hespeler, Elmira, Strathroy, Kincardine, and Walkerville.

Pianos and Organs. Important manufactories of musical instruments are established at Goderich, Woodstock, Ingersoll, Clinton, Listowel, Guelph, Toronto, Oshawa, Bowmanville, Kingston, and Ottawa.

Flour-Milling. Ontario has many well-equipped flour-mills, notably at Keewatin, Toronto, Tillsonburg, Goderich, Lindsay, Chatham, Meaford, and London.

Woollens and Cottons. Such progress has been made, during the past twenty years, in the manufacture of woollen goods that only the finest fabrics are imported. The chief seats of this industry are Peterborough, Almonte, Hespeler, Brantford, Preston, Chatham, Stratford, etc. The principal centres of the knitting industry are Hamilton, Paris, Dunnville, Almonte, Toronto, Hespeler, Galt, Stratford, Kingston, and Oshawa. Hamilton is also the chief centre for the manufacture of cottons.

Other Manufactures. Among the other manufactures of this province are the following: *Glass* at Wallaceburg, Toronto, and Hamilton; *Beet-Sugar* at Wallaceburg and Berlin; *Boots and Shoes* at London, Hamilton, Toronto, and Brampton; *Wire Fencing* at Walkerville, Hamilton, London, Owen Sound, and Toronto; *Tinware* at Toronto, Hamilton, and London; *Paints and Varnishes* at Windsor, Walkerville, Brantford, Hamilton, and Toronto; *Biscuits and Confectionery* at Toronto, Brockville, St. Catharines, Stratford, Collingwood, and Brantford; *Portland Cement* at Owen Sound, Durham, Belleville, Port Colborne, Orangeville, and Lakefield; *Tanned Goods* at Toronto, Bracebridge, Berlin, Acton, Owen Sound, Oshawa, London, Barrie, and Kingston. *Ships* are built at Toronto, Collingwood, and Owen Sound.

FISHERIES

The Great Lakes afford the most extensive freshwater fisheries in the world. These are now carefully regulated and protected by the Dominion and Provincial Governments, and to re-stock the waters the Dominion Government has fish hatcheries at Newcastle, Ottawa, and Sandwich. The principal fish taken are lake trout, in lakes Superior and Huron, and Georgian Bay; herring in lakes Erie and Ontario; sturgeon in Lake of the Woods, and lakes Superior and Nipissing; pike and pickerel in Lake Erie. Hudson Bay also abounds in fish, and when means of transportation are supplied, no doubt important fisheries will be established there.

POWER

Since there is no coal in Ontario, it is necessary to spend millions of dollars annually to import it in order to generate power required by the industries of the province. This is a considerable tax on such enterprises. The country is, however, abundantly supplied with a source of cheap power in its very numerous waterfalls. It is computed that in these waterfalls there are three and a half millions of horse-power which can be utilized for industrial purposes.

Power House, Niagara Falls.

There are already great plants for developing electric power in various parts of the province, especially at Niagara Falls and Ottawa. The numerous falls in northern Ontario will, no doubt, in time be utilized to supply the power for pulp-making, mining, and other similar purposes.

SUMMER RESORTS

The Thousand Isla [illegible]

Owing to the fine, invigorating summer climate and the abundance of fish, Northern Ontario is becoming a noted summer resort. There are numerous hotels, and the shores and islands of the Muskoka Lakes and Georgian Bay are dotted with summer cottages. Various places on the shores of the southern lakes attract numerous summer visitors, e.g., Port Dover, Port Stanley, and Port Colborne on Lake Erie; and Cobourg, Port Hope, and Whitby on Lake Ontario. Finally, the beautiful scenery of The Thousand Islands annually gathers a multitude of cottagers, as well as more transient visitors.

HUNTING AND TRAPPING

The fame of the hunting grounds of Northern Ontario attracts many sportsmen every autumn from Southern Ontario and the United States. Deer are numerous, moose plentiful, and bears are occasionally met with. Even Hudson's Bay Company's trappers are still able to make their living here.

XXXV. TRANSPORTATION

Railways. Among the railway systems in Ontario, the Grand Trunk, the Canadian Pacific, the Canadian Northern, the Timiskaming and Northern Ontario, and the Grand Trunk Pacific are the chief.

The Grand Trunk has its eastern terminals at Portland, in Maine, and at Quebec and Montreal. From Montreal it runs westward to Toronto, along the St. Lawrence River and Lake Ontario. From Toronto [illegible] (1) to Niagara Falls through Hamilton, [illegible] westward to Windsor and Sarnia through the principal cities and towns of southwestern Ontario; (3) northward to the lake ports of Goderich, Kincardine, and Southampton on Lake Huron; (4) to Owen Sound, Meaford, Penetanguishene, and Midland on Georgian Bay; and (5) through the Highlands of Ontario to North Bay and Sudbury.

The Canadian Pacific. The main line of this great system passes up the Ottawa valley to Mattawa, thence it runs westward across the entire province north of the Great Lakes. At Sudbury there is a branch line to Sault Ste. Marie.

Timiskaming and Northern Ontario Railway, Cobalt.

In southern Ontario the principal branches operated are the following: the Ontario and Quebec Division, Montreal to Toronto; Ottawa to Prescott; Ottawa to Brockville; Kingston to Pembroke; the Toronto and Sudbury line; the Guelph and Goderich branch. The Canadian Pacific Railway makes connection with Buffalo over the Grand Trunk Railway to Hamilton, and then over the Toronto, Hamilton, and Buffalo Railway to Buffalo.

The Canadian Northern. The main line of this system runs from Port Arthur westward to Edmonton, and serves Port Arthur, Fort William, Fort Frances, and Rainy River.

The Canadian Northern Ontario runs from Toronto northward through the Muskoka Lake district to Parry Sound, Sudbury, and Sellwood. This line is to be linked to the main line at Port Arthur.

The Timiskaming and Northern Ontario. This system, which is owned by the Government of the province, serves northern Ontario. The main line runs from North Bay northward to Englehart, and thence to Cochrane, a distance of 253 miles. Here, it meets the Grand Trunk Pacific.

The Grand Trunk Pacific enters this province from northern Quebec and runs westward through the clay belt to Winnipeg, with a branch to Fort William and Port Arthur.

The Michigan Central, an important line in southern Ontario, enters the province from the United States at Niagara Falls and Fort Erie, and runs westward through St. Thomas to Windsor and Amherstburg.

Electric Railways. The development of electric power in Ontario has led to the construction of electric railways in many of the larger towns and cities of the province. These railways are not now confined to urban places only, but are being extended to serve rural parts also.

Canals. Lake Superior is 602 feet above the tide-water of the St. Lawrence. Hence there are rapids and falls, such as those on the Sault Ste. Marie River, at Niagara Falls, and on the St. Lawrence River. To avoid these, a system of canals has been constructed: viz., the Sault Ste. Marie Canal, one and a quarter miles long; the Welland Canal 26¾ miles long; and the St. Lawrence Canals 45½ miles long. Thus the Great Lakes and their outlet to the Atlantic Ocean give to Ontario the advantages of a maritime country with respect to cheap water transportation.

The following table gives particulars regarding the through route between Montreal and Port Arthur or Fort William:

Name	Length in Miles	No. of Locks	Rise in Feet
Lachine Canal	8½	5	45
Lake St. Louis and River St. Lawrence	16	..	..
Soulanges Canal	14	5	84
Lake St. Francis and River St. Lawrence	33	..	..
Cornwall Canal	11	6	48
River St. Lawrence	5	..	..
Farran's Point Canal	1	1	3½
River St. Lawrence	10	..	.
Rapide Plat Canal	3½	2	11½
River St. Lawrence	4	..	..
Galops Canal	7½	3	15½
River St. Lawrence and Lake Ontario	236	..	..
Welland Canal	26¾	26	326¾
Lake Erie, Detroit River, Lake St. Clair, and Lake Huron	580	..	..
Sault Ste. Marie Canal	1¼	1	18
Lake Superior to Port Arthur	266	..	..
Total	1223½	49	

There are two other canal systems in Ontario: the Rideau River system, from

Kingston to Ottawa, and the Trent Valley system, from Trenton through the Kawartha Lakes to Georgian Bay. The Murray Canal, 5½ miles long, separates the peninsula of Prince Edward County from the mainland, and greatly shortens the distance into the Bay of Quinte from the west.

Rideau Canal.

XXXVI. GOVERNMENT, CITIES, TOWNS

GOVERNMENT

The Provincial Government consists of the *Lieutenant-Governor*, who is appointed by the Dominion Government; an *Executive Council* representing the party in power; and a *Legislative Assembly* elected by the people.

The province is subdivided into counties, districts, and cities. A county consists of the *townships*, *towns*, and *incorporated villages* which it contains.

County. Each county has a ***County Council*** consisting of the reeves and deputy-reeves of the townships, towns (unless separated from the county), and incorporated villages within the county. These meet in the county town to manage the business of the county, its county roads, county bridges, county buildings, e.g., the court-house, jail, house of refuge; to appoint county officers, such as Public School Inspector, County Treasurer, County Clerk; to provide money by taxation; to equalize the assessment of the townships, etc.

District. A district is a division of Ontario in which, owing to the sparseness of population, there is no County Council, and hence the duties of the County Council are discharged by the Government of the province.

City. A city, unless it receives a special charter, must have 15,000 or more inhabitants. Its affairs are managed by a mayor and aldermen, or by a mayor, aldermen, and controllers, as is the case in Toronto.

Township. The local affairs of a township are managed by a council of five: a reeve, and four councillors, or a reeve, a deputy-reeve, and three councillors, etc.; or even a reeve and four deputy-reeves, according to the number of voters in the municipality.

Incorporated Village. This must have 750 or more inhabitants, unless it receives a special charter. The local affairs are managed as are those of a township.

Town. A town must have 2,000 or more inhabitants. If not separated from the county for municipal purposes, its affairs are managed

Ontario Parliament Buildings, Toronto.

by a mayor, councillors, and a reeve, or a reeve and deputy-reeve, or deputy-reeves, according to the number of voters in the municipality.

Where a town is separated from the county for municipal purposes, its affairs are managed by a mayor and councillors.

CITIES

Toronto, the capital of the province and the second city in size in the Dominion, is situated on a good harbour sheltered by a low-lying island. It possesses fine parks and handsome public buildings, such as the City Hall, the Legislative Buildings, the Public Library, and numerous churches. It is the seat of many educational institutions, e. g., the University of Toronto, with its affiliated colleges, University, Victoria, Trinity, St. Michael's, Knox, Wycliffe; McMaster University; a Normal School, etc. Its industries are many and varied, including the manufacture of agricultural implements, steam engines, heating apparatus, mining and other machinery, carpets, pianos and organs, glassware, carriages of all kinds, etc. Excellent railway and steamboat connections make it a great distributing centre for Ontario as well as for the great West.

University College, Toronto

Ottawa, the capital of the Dominion, is the second city of Ontario in population. The Parliament Buildings on a commanding site overlooking the Ottawa River are beautiful both in their situation and architecture. This city is the seat of the University of Ottawa and of a Normal School. The chief industry is the lumber trade. The Chaudière Falls on the Ottawa River, between the cities of Hull and Ottawa, is one of the finest water-powers in the Dominion. This drives the saw-mills, and generates power to run the electric cars and light the streets of both cities.

Hamilton, the third city of the province, beautifully situated on a landlocked bay at the head of Lake Ontario, is essentially a manufacturing city. It has iron foundries and blast furnaces; its manufactures include agricultural implements, electrical apparatus and machinery, bridge and structural steel, cotton fabrics, steel and steel goods, etc. It is the seat of one of the seven normal schools of the province, and of a fine Technical Institute.

London, 121 miles west of Toronto, at the junction of the north and south branches of the Thames River, is the centre of a fine agricultural district. The Grand Trunk, the Canadian Pacific, the Michigan Central, and their branches give it excellent railway connections. Its industries include factories for the production of agricultural implement and furniture, foundries, oil and chemica works, cigars, etc. It is the seat of th Western University and a Normal School.

Rideau Falls, Ottawa.

Kingston, situated near the point wher Lake Ontario flows into the St. Lawrence

River, is the seat of Queen's University and the Royal Military College. Its industries include the manufacture of locomotives, cars, steam-engines, and agricultural implements. Just west of the city is one of the Dominion penitentiaries, and one of the Provincial asylums for the insane.

Brantford, 63 miles west of Toronto, on the Grand River, is surrounded by a fine agricultural district. It has excellent railway connections both east and west, north and south. Its manufactures are important, and include agricultural implements, machinery, woollens, carriages, and stoves. It is the seat of the Provincial Institute for the Blind.

Peterborough, 76 miles from Toronto, is situated on the Otonabee River, which furnishes the city with electrical power to operate its many factories. It has railway communication both east and west and north and south by means of the Toronto and Montreal branch of the Canadian Pacific Railway, and the Midland Branch of the Grand Trunk system. It is the seat of a Normal School. Its manufactures include electrical machinery and appliances, woollens, cereal food, and packed meat.

Windsor, 230 miles from Toronto, on the Detroit River, opposite Detroit, has several flourishing industries, including those connected with the manufacture of tobacco, salt, paints and varnishes, wire-fencing, etc. Three lines of railway, the Grand Trunk, Canadian Pacific, and Michigan Central converge here. The two former enter the United States by means of ferries, and the latter by a tunnel to Detroit.

St. Thomas, 130 miles from Toronto, is a railway centre. The Michigan Central has construction shops here, where locomotives and cars are manufactured. The city contains foundries, carriage and wagon works, and stock-yards.

Stratford, 88 miles from Toronto, is in the midst of a fine farming country. Several branches of the Grand Trunk system pass through the city, hence it is a great distributing point. The business of the city centres about the Grand Trunk Railway shops and factories; but furniture, machinery, agricultural implements, biscuits and confectionery are manufactured. It is the seat of a Normal School.

St. Catharines, 70 miles from Toronto by rail, is situated on the Welland Canal, and is the centre of a fine fruit-growing district. The canal supplies water-power for its industries, which include fruit-canning, paper-making, flour-milling, and the manufacture of edge-tools.

Guelph, 45 miles from Toronto, is situated on the Speed River, from which water-power is obtained. It is the centre of the live-stock industry of the province, and the seat of the Ontario Agricultural College and the Macdonald Institute. Its manufactures include pianos and organs, furniture, agricultural implements, knitted goods, and stoves.

Hamilton.

Chatham, 180 miles from Toronto, is situated at the head of navigation on the Thames, in the midst of a rich agricultural district. The Grand Trunk, Canadian Pacific, and Pere Marquette railways intersect here. Here are manufactured carriages, engines, boilers, office furniture, flour, and woollen goods.

Woodstock, situated 90 miles from Toronto, in a district noted for its dairy products, is a centre for the export of large quantities of butter and cheese. Its manufactures include furniture, wagons, pianos and organs, agricultural implements, and stoves.

Ontario Agricultural College, Guelph.

Belleville, on the Bay of Quinte, 113 miles east of Toronto, is an important market for dairy produce, especially cheese. Its industries include rolling-mills, cement works, and furniture factories. It is the seat of Albert College and of the Provincial Institute for the Deaf and Dumb.

Niagara Falls, situated on the Niagara River near the Falls, 83 miles from Toronto by rail, is the seat of great electrical plants. It has excellent railway connection both with points in Canada and in the United States, and is a famous tourist resort. It contains silver works, iron-mills, electro-chemical industries, flour-mills, and a large cereal plant, —all making use of electric power.

One of the grain elevators, Fort William.

Fort William, incorporated as a city in 1907, is situated at the head of lake navigation on Lake Superior. It is the lake terminus of the Canadian Pacific and the Grand Trunk Pacific railways. There are immense elevators on the banks of the Kaministikwia to receive the grain from the Western provinces for shipment to the east. Abundance of electric power is provided from the Kakabeka Falls. Its industries include large flour-mills, and manufactories of stove ranges, bricks, sashes and doors, and wire-fencing.

Port Arthur, on the shore of Thunder Bay, at the head of navigation on Lake Superior, is on the Canadian Pacific Railway, and is the lake terminus of the Canadian Northern Railway. The city owns and operates its own electric railway, electric lighting system, telephone system, and waterworks. A blast furnace, boiler works, saw-mills, foundries, elevators, cold storage plants, and fisheries furnish employment to large numbers of men.

Sault Ste. Marie, on St. Mary's River, between lakes Superior and Huron, has railway connection both east and west by means of the Canadian Pacific Railway. The river supplies the city with power, and the abundance of iron ore and spruce in the neighbourhood furnishes raw material for its iron and steel plants and its pulp-mills. Many tons of ingots and finished iron and steel products, including steel rails, are produced each year. Both the Canadian and the United States canals in this river are free to ships of each country.

Berlin, 62 miles west of Toronto, on the main line of the Grand Trunk Railway, manufactures furniture, store fixtures, pianos, leather, wood-working machinery, boilers and engines, furnaces, rubbers, boots and shoes, and buttons.

TOWNS

Cornwall, 265 miles east of Toronto, is situate five miles east of the Longue Sault Rapids of th St. Lawrence River. The Grand Trunk, an

Entrance to tunnel under St. Clair river

the Ottawa branch of the New York Central system gives it railway connections east and west, north and south. The Cornwall Canal supplies water-power for a number of important industries, including large cotton-mills, and paper and pulp-mills.

Owen Sound is situated 122 miles from Toronto on one of the finest harbours of the Upper Lakes. In the summer the Canadian Pacific steamers connect it with Fort William. Both the Grand Trunk and the Canadian Pacific railways have divisions terminating here. Among its industries are foundries, tanneries, cement works, and agricultural implement factories.

Sarnia, 170 miles west of Toronto, is on the St. Clair River. Here is the tunnel connecting the railway systems of Ontario and Michigan. The industries of Sarnia include oil refining, lumber mills, salt works, carriage works, stove works, and the manufacture of agricultural implements and cereal foods.

Brockville, 208 miles east of Toronto, is situated on the main line of the Grand Trunk Railway. A branch of the Canadian Pacific Railway connects it with Ottawa. It is the centre of an important dairying district. Its industries include the manufacture of stoves, furnaces, hardware, carriages, and agricultural implements. Its situation at the foot of The Thousand Islands of the St. Lawrence, attracts many summer visitors.

Galt, 57 miles west of Toronto, is situated on the Grand River, which supplies it with power. Its industries include the manufacture of woollen and knitted goods, edge-tools, boilers, engines, carriage-springs, safes, heating apparatus, flour, and oatmeal.

Collingwood, 94 miles from Toronto, is a lake port on Georgian Bay, with fine docks and the largest dry dock on the upper Canadian lakes. It possesses the largest steel ship-building plant in the Dominion, also grain elevators, foundries, and saw and planing mills.

Brock's monument at Queenston Heights.

Oshawa, on the main line of the Grand Trunk Railway, 33 miles east of Toronto, contains the largest carriage plant in Canada, a malleable iron factory, a large piano factory, gas-fittings works, a canning factory, a large woollen mill, and agricultural implement works.

Lindsay, 70 miles from Toronto, is the centre of a fine farming area, in the midland district of southern Ontario. The Grand Trunk and Canadian Pacific railways furnish it with excellent transportation facilities. It is situated on the Scugog River and has steamboat connection with the many summer resorts on the Kawartha Lakes. Its industries include the manufacture of lumber, flour, and agricultural implements.

Thunder Cape, near Port Arthur.

XXXVII. QUEBEC

Position and Extent. The Province of Quebec is situated in the north-eastern part of North America. It stretches from the Ottawa River and meridian 79½ on the west to Labrador on the east, and from the 45th parallel on the south to the 62nd parallel on the north. Its area is about 705,000 square miles. This is more than that of France, Germany, and Austria-Hungary combined, and is nearly six times as large as that of the British Isles.

Running Lachine Rapids.

Surface. The Province is naturally divided into two parts by the St. Lawrence River. South of this river, a spur of the Appalachian chain consisting of a succession of ridges enters Quebec between lakes Champlain and Memphremagog, and continues in a north-easterly direction across the country, in a series of rolling hills known as the Notre Dame Mountains, to a point about 30 miles south of the river. Thence it follows the general course of the river at varying distances north-eastward, to form the table-land of Gaspé and the Shickshock Mountains. The region through which this spur extends is known as the Eastern Townships, and comprises twelve counties. It is a rolling country but, to the west, between the Notre Dame Mountains and the St. Lawrence River, it is generally level and fertile.

North of the St. Lawrence and east of the Ottawa, the valley is fertile, fairly level, and triangular in shape. It is bounded on the north by the Laurentian range of low mountains, which reaches the St. Lawrence about 20 miles below Quebec City and the Ottawa about half-way between Montreal and the City of Ottawa. The Laurentian country to the north of this fertile valley is distinguished for the vast number of its lakes. These are the sources of a great many rivers which flow into the St. Lawrence and Ottawa, and in their descent provide abundant water-power. The whole table-land is worn into rounded hills by the weathering

Montmorency Falls.

of countless ages. It is covered with forests and is a favourite fishing and hunting ground.

Drainage. In Quebec there are many rivers, of which the St. Lawrence is by far the greatest. The principal tributaries from the south-east are those that drain the fertile, triangular plain between the cities of Quebec and Montreal. These are the *Richelieu*, which is the outlet of Lake Champlain, *Yamaska*, *St. Francis*, *Chaudière*, and others.

North of the St. Lawrence are the *Saguenay*, the outlet of Lake St. John, a deep, dark and gloomy stream, world-renowned for the splendour of its scenery, and visited annually by large numbers of tourists; the *Montmorency*, noted for its falls, 275 feet high; the *St. Mauricé*, which drains the country between the basins of the Saguenay and the Ottawa, and on which are the Shawenegan Falls, one of the chief sources of electric power for Montreal and vicinity; and the Ottawa, with its tributaries, the *Gatineau* and the *Lièvre*. The Ottawa, the largest tributary of the St. Lawrence, is 780 miles long. Although difficult of navigation on account of its numerous rapids, this river is very important in lumbering.

All the rivers flowing from the Laurentian Highlands have dark, smoky-coloured water, and are remarkable for their many rapids and falls, as well as for their tortuous courses.

Soil. The north shore of the St. Lawrence as far back as the Laurentian Highland is fertile; so is also the south shore with the exception of the Gaspé peninsula, which is rough and rocky. In both these areas the soil is generally composed of clay and sand to a variable depth. In the region about Lake St John there is another fertile tract that is becoming an excellent farming country. North of the Laurentian Highland, neither soil nor climate is suitable for agriculture.

Climate. In so large a province the climate is naturally very varied. On the south side of the St. Lawrence, from Quebec City south-westward, the summer heat is great, often exceeding 80°, and wheat, Indian corn, grapes, and tomatoes grow to perfection. Below Quebec along the shores of the rivers and Gulf the spring is late and cool, owing to the adjacent cold waters, and wheat cannot be profitably grown below the Saguenay.

Over the whole province the winters are cold and the snowfall is abundant. For about five months in the year, the lakes and rivers, including the St. Lawrence above Quebec City, are icebound. These form excellent winter roads, and the *habitants*, as the French-Canadians are called, are thus enabled to bring their produce to profitable markets.

People. About four fifths of the people are descendants of the original French colonists. People of English, Irish, or Scottish origin constitute the greater part of the remaining fifth; they are found principally in the larger towns and in the region known as the "Eastern Townships."

Raft of logs on the St. Lawrence River.

INDUSTRIES

Agriculture. The greater number of the people of Quebec are engaged in agriculture. Oats and hay are the most valuable crops, followed in order by potatoes, peas, and beans. The hay is shipped in bales, chiefly to the United States. Stock-raising is becoming an important industry. Thoroughbred cattle and sheep are, as in Ontario, growing sources of revenue to the farmers, particularly in the Eastern Townships. Dairying is increasing yearly; among the provinces, Quebec is first in butter-making, and second only to Ontario in cheese-making. Flax and tobacco are extensively grown.

In the Montreal district, apple orchards are common, and almost every farm has its maple sugar-bush, which each spring brings a considerable return.

Lumbering. The timber trade ranks next to agriculture as a source of wealth. This industry furnishes a great part of the exports of the province. The most important woods are white and red pine, obtained chiefly along the tributaries of the Ottawa and the St. Maurice. Other woods are spruce, larch, cedar, birch, and maple. The timber is cut during the winter, hauled on the snow to the bank of the nearest stream and, when the ice breaks up in the spring, it is floated down to be manufactured into lumber or shipped as "square timber." The bulk of the lumber is exported to the United States, Great Britain, France, Germany, the West Indies, and South America.

Interior of a cotton-mill.

A view of the lower St. Lawrence.

Manufactures. Although Quebec has no coal of its own, the abundant supply of water-power for manufacturing purposes makes up for this deficiency, and places Quebec next to Ontario in respect to the value of its manufactures. Throughout the province there are many saw-mills, flour-mills, cotton-mills, and paper-mills, all run by water-power. The leading industries are the manufacture of leather and of boots and shoes, carried on at Montreal, Quebec, and St. Hyacinthe; of iron at Montreal, Three Rivers, and Sherbrooke; of sugar at Montreal; of furs and hats at Montreal and Quebec; of cottons at Montreal and Valleyfield; of woollens at St. Hyacinthe, Valleyfield, and Sherbrooke; of tobacco and cigars at Quebec and Montreal; of paper and pulp at Hull, Grand Mère, Valleyfield, and St. Hyacinthe.

Mining. Quebec is fairly rich in minerals The most valuable, from a commercial point of view, is asbestos, obtained chiefly at Thetford in the County of Megantic. This mineral can be crushed, and woven like wool Being fireproof, it is used for ropes, firemen's coats, packing for steam-engines, fireproof curtains, lamp wicks, etc. Apatite, or phosphate of lime, a valuable fertilizer, is found

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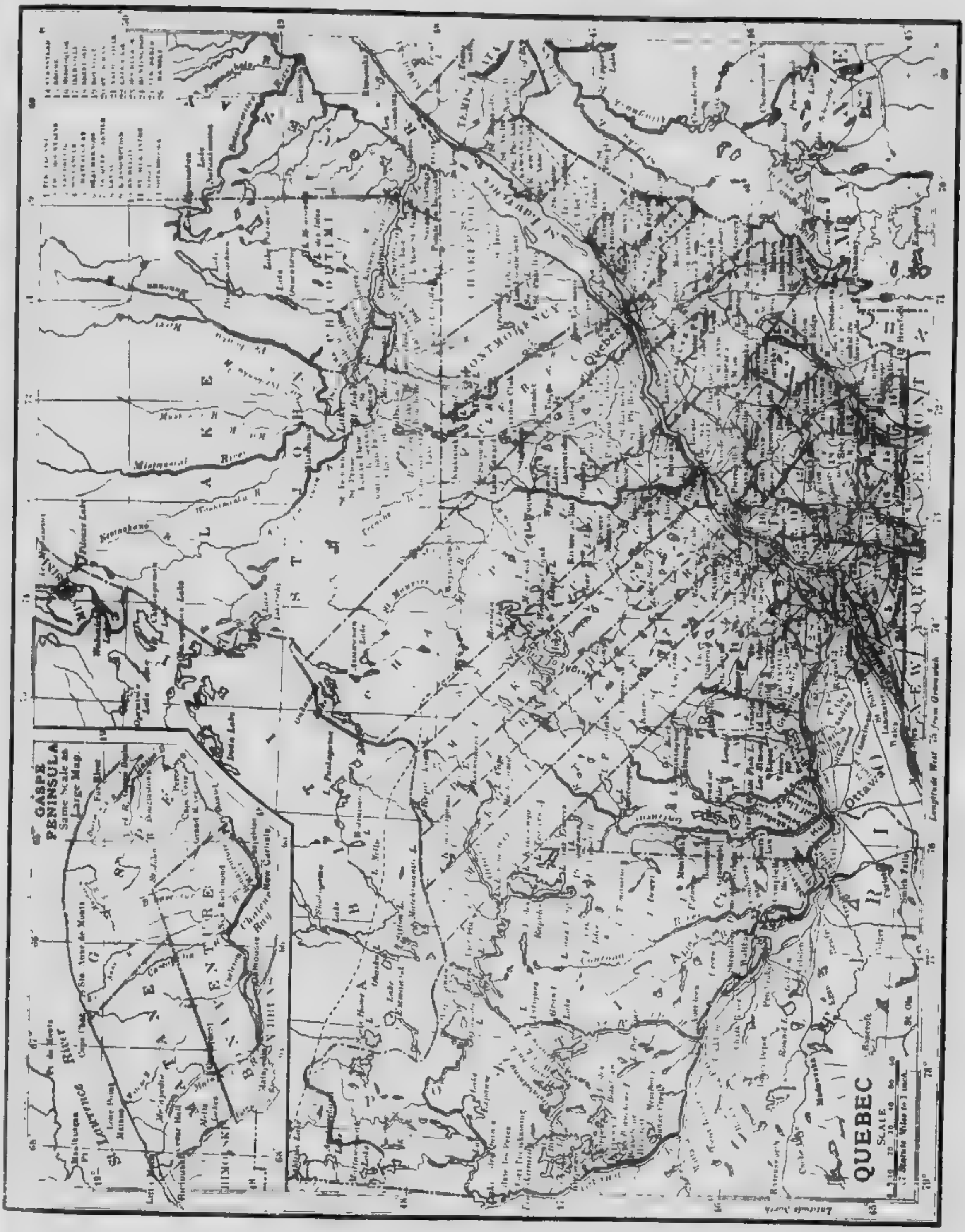


in the Laurentian rocks north of the Ottawa River, and is exported to Great Britain.

Copper ore is found at many places in the Eastern Townships; the principal mines now worked are at Capelton. Mica, which has become valuable for electrical purposes, is found along the Lièvre and Gatineau rivers. Iron ore is found in the neighbourhood of the St. Maurice and St. Francis rivers; reduction of the ore has been carried on since the time of Governor Frontenac at the Radnor and Drummondville furnaces.

Graphite, or black-lead, of excellent quality is found on the Lièvre River not far from Buckingham.

Fishing is an important industry along the shores of the lower St. Lawrence and the Gulf. In many cases the *habitants* along the St. Lawrence River combine fishing with farming. The chief varieties of fish taken are salmon, cod, herring, and mackerel. The lobster catch is also valuable. The Dominion Government has established hatcheries at Gaspé, Tadousac, Magog, and other places, for stocking the neighbouring rivers and lakes.

TRANSPORTATION

The St. Lawrence River gives both Montreal and Quebec direct water communication with the ports of the world. Great steamships move up and down its waters. Numerous lighthouses and gas-buoys render navigation comparatively easy, even at night. The ship channel through Lake St. Peter has to be dredged to remove the deposits which the stream is constantly making, and the boulders which are annually brought down by the ice.

Parliament Buildings, Quebec.

The province is also well supplied with railways. The Intercolonial connects Montreal and places south of the St. Lawrence with Halifax and St. John. The Grand Trunk connects the cities of Quebec and Montreal with Portland in Maine, and with Ontario. The Canadian Pacific connects Montreal with places east and west of that city.

Steamer leaving harbour.

The country north of the St. Lawrence is almost equally well supplied with railways. The Quebec to Montreal division of the Canadian Pacific connects these two cities with each other and with intervening places along the north shore of the river. Farther inland the Canadian Northern Quebec also connects these two centres, and serves the towns of St. Jerome, Joliette, Shawenegan Falls, and Grand Mère. The comparatively new district of Lake St. John is served by the Quebec and Lake St. John Railway.

The Grand Trunk Pacific, which will cross the St. Lawrence on a bridge at Quebec, will connect the north-western part of the province and the city of Quebec with the Maritime Provinces.

GOVERNMENT

The Provincial Government consists of the *Lieutenant-Governor*, who is appointed by the Dominion Government; an *Executive Council*, representing the party in the majority in the Legislative Assembly; a *Legislative Assembly*, chosen by popular election; and a *Legislative Council* selected by the Lieutenant-Governor-in-Council. Quebec and Nova Scotia are the only provinces of Canada that have Legislative Councils, or Senates.

CITIES

In Quebec there are nine cities and a number of important towns.

Quebec, the provincial capital, was founded by Champlain in 1608. It is the oldest city in the Dominion, and one of the oldest in America. It is built on a commanding site overlooking the river St. Lawrence, which, at this point, is two miles wide, and it was at one time the head of navigation. The city consists of an "Upper Town" and a "Lower Town." The Upper Town covers the bold promontory called Cape Diamond, and the Lower Town is spread out at the base of the cape.

The harbour is large enough to hold a navy and deep enough to float the largest vessels built. The city is the headquarters of the ocean timber trade, although it has rivals in Three Rivers and Montreal. It has important manufactures of leather, boots and shoes, furs, and tobacco. It is the seat of Laval University and of a Normal School. Owing to its historical associations, picturesque situation, exhilarating climate, and accessibility, this city has become a popular resort for tourists.

Montreal, founded in 1641 by Maisonneuve, is the most populous city and the greatest commercial centre in Canada. It is situated on the east side of Montreal Island, at the head of navigation for the larger ocean-going vessels. It commands the greater part of the trade with Western Canada, and is the chief distributing centre for the imports of Canada. Its manufactories are the most extensive of any city in the Dominion, and include cotton-mills, rolling-mills, sugar refineries, tobacco factories, boot and shoe factories, rubber factories, and many others. Here are located the principal locomotive works and car shops of both the Canadian Pacific and Grand Trunk railways. The latter railway crosses the river on the Victoria Jubilee Bridge, which consists of 25 spans and is a mile and a quarter long. The city is the seat of McGill University, with its many buildings for arts, science, and medicine. Beautiful monuments, stately churches, great convents, noted hospitals, and relics of early French occupation make Montreal an attractive city for tourists.

Hull. Hull is situated on the north bank of the Ottawa River opposite the city of Ottawa. It is an important lumbering and manufacturing centre. The Chaudière Falls of the Ottawa River supply the water-power for large mills, which manufacture on an extensive scale lumber, wood pulp, paper and paper products, woodenware and matches. Three bridges cross the river and connect the two cities.

The water front at Montreal and Bonsecours market.

Three Rivers is situated on the north bank of the St. Lawrence, at the place where the St. Maurice discharges itself through three mouths. It carries on trade in lumber and iron. Near this city, at Radnor, forges were constructed at the instance of Governor Frontenac, and the manufacture of iron has continued there ever since.

Valleyfield. Valleyfield is situated on the Beauharnois Canal at the foot of the Coteau Rapids of the St. Lawrence. It has abundant water-power for its cotton, paper, and other mills, and is an important manufacturing centre.

St. Hyacinthe. St. Hyacinthe is situated on the Yamaska River, 30 miles east of Montreal. It manufactures woollens, leather, paper, machinery, boots and shoes. It is the seat of the Provincial Experimental Dairy School.

Levis. Levis is situated on the south bank of the St. Lawrence opposite Quebec city. Here the port of Quebec has a large graving dock, 495 feet long, 100 feet wide, with 25½ feet depth of water on the sill at high tide. From Levis railways radiate to southern Quebec, to the Maritime Provinces, and to the United States.

Sorel. The city of Sorel was founded very long ago at the mouth of the Richelieu on the ancient war-path of the Iroquois. It has extensive iron manufactures. Through the Richelieu River, Chambly Canal, and Lake Champlain it has direct water communication with the Hudson River.

Sherbrooke. Sherbrooke is the chief place in the Eastern Townships, and is surrounded by a fine, progressive agricultural district. It is well supplied with water-power from the St. Francis River, and has mills for the manufacture of woollens and machinery.

XXXVII. NEW BRUNSWICK

Position. New Brunswick lies between the State of Maine on the west and the Gulf of St. Lawrence and Northumberland Strait on the east, and between Quebec and Chaleur Bay on the north and the Bay of Fundy on the south. It is connected with Nova Scotia by a neck of land 12 miles wide, called the Isthmus of Chignecto.

Size. The province is oblong in shape, stretching from north to south 210 miles and from east to west 190 miles. It is the largest of the Maritime Provinces, having an area of nearly 28,000 square miles.

Surface. New Brunswick may be described as a country of rolling plains and hills. There are no mountains of any considerable height. The whole southern shore is protected from the scouring of the tides by a series of ridges 30 miles wide, composed of granite and crystalline rock. From the south-western extremity of the province a similar band of hard rock stretches to Chaleur Bay. These two bands of rock form a V, and between them the country is a wide, flat plain. North of the northern arm of the V stretches an undulating plateau, varying in height from 800 to 1,200 feet. The dividing ridge between the streams flowing into the Gulf of St. Lawrence and the head-waters of the St. John is a broken country with detached mountains from 1,500 to 2,000 feet high.

Rocks at Hopewell Cape, New Brunswick.

A tidal estuary in New Brunswick.

Drainage. New Brunswick is a country of large rivers. The *St. John River*, which rises in Maine, flows toward the north-east, then to the south-east, and after a course of 450 miles empties its waters into the Bay of Fundy From the beauty of its scenery it is sometimes called "the Rhine of America." For 30 miles from its mouth, the river flows between upland farms, wooded hills, and bold bluffs. Beyond this for 50 miles the banks are but little raised above the ordinary water level; in spring the valley is here overflowed, and its far-reaching meadows covered with a rich sediment. The river is navigable for large steamers to Fredericton, 84 miles from its mouth. Small vessels, except during low water in summer are able to reach Woodstock, 60 miles farther up. About 225 miles from it mouth are the Grand Falls, 74 feet high.

The *Miramichi* rises in two main branches, the north-west and south-west; these unite a few miles above Newcastle, and after a course of about 220 miles empty into the Gulf of St. Lawrence. It is navigable for large vessels to Newcastle. Much of the basin of the Miramichi is still unexplored, but the lumbermen are yearly penetrating farther into its valuable forests. It is one of the far-famed salmon rivers of New Brunswick.

The *Restigouche* forms part of the boundary between Quebec and New Brunswick. From Dalhousie to Matapedia it measures about four miles across. It is the most noted trout and salmon stream in the world.

Other rivers are the *Petitcodiac*, remarkable for its great tides and "Tidal Bore"; and the *St. Croix*, which forms part of the boundary between New Brunswick and Maine.

Soil. The most fertile regions in New Brunswick are the alluvial lands found in the level tracts along the St. John and other rivers. The uplands are in general fertile, and produce fine crops of oats and hay. A considerable portion of the province, about 27 per cent., consists of bogs, heath, barren caribou plains, and tracts of swampy country incapable of cultivation.

Climate. New Brunswick has a healthful climate. Excepting along the coast, the country is free from fogs, and the heat and cold are not felt as in moister climates. Autumn is one of the most delightful seasons of the year. The winter is cold, but the snow which covers the ground for three or four months enables the lumberman to pursue his calling. The change from winter to summer is fairly rapid. The summers are pleasantly, although not excessively, warm. In this climate vegetation grows rapidly. Indian corn, tomatoes, apples, plums, and pears do well, and root-crops grow to perfection.

Swallow-Tail Light, North Head, Grand Manan.

People. At the time of the French discovery and exploration in Canada, settlements were made in this province, which then formed part of what was called Acadia. In 1713 the country passed into the hands of the British, and on the conclusion of the American Revolutionary War in 1783, the United Empire Loyalists, to the number of 12,000, emigrated to this district and the City of St. John was founded. Since then large numbers of people have come from the United Kingdom.

The Restigouche, a noted salmon stream.

INDUSTRIES

Agriculture. The chief industry of New Brunswick is agriculture. The principal crops grown are hay, oats, potatoes, turnips, buckwheat, barley, carrots, and peas.

The country, being well watered, is especially adapted for pasturage. It produces the finest quality of butter and cheese, which is

Falls and lumber-mill at St. George, N. B.

exported chiefly to England. The provincial government has established a dairy school at Sussex, and government instructors travel about the province giving information upon all branches of farm work. The country is well adapted to cattle-raising; much attention is given to this industry.

Lumbering. Lumbering is next in importance to agriculture. The principal commercial wood is spruce, which is sawn into lumber and sent to Great Britain and the United States. The other forest trees of commercial value are the fir, larch, maple, oak, elm, beech, ash, butternut, poplar, and hemlock. The rivers of New Brunswick are important factors in the prosecution of this industry.

Fisheries. The Bay of Fundy, the Gulf of St. Lawrence, and the Chaleur Bay give New Brunswick a total coast-line of 600 miles. Its coast fisheries are one of the greatest sources of wealth to the province. The chief varieties of fish of commercial value are herring, cod, haddock, salmon, and shad. The lobster and oyster fisheries also yield profitable returns. Among the provinces, New Brunswick ranks next to Nova Scotia and British Columbia in the value of its fisheries. As in the case of Ontario and Quebec, the Dominion Government has established a number of hatcheries to stock the neighbouring waters. The total value of the fishing industry is now about $5,000,000 per annum.

Manufacturing. The chief manufactures of New Brunswick are those connected with wood, cotton, iron, and leather.

Wood. Extensive saw-mills, employing thousands of men, are found on the large streams of the province. The great spruce forests supply material for the making of pulp for paper, and hence at Chatham, St. John, and elsewhere there are large pulp-mills.

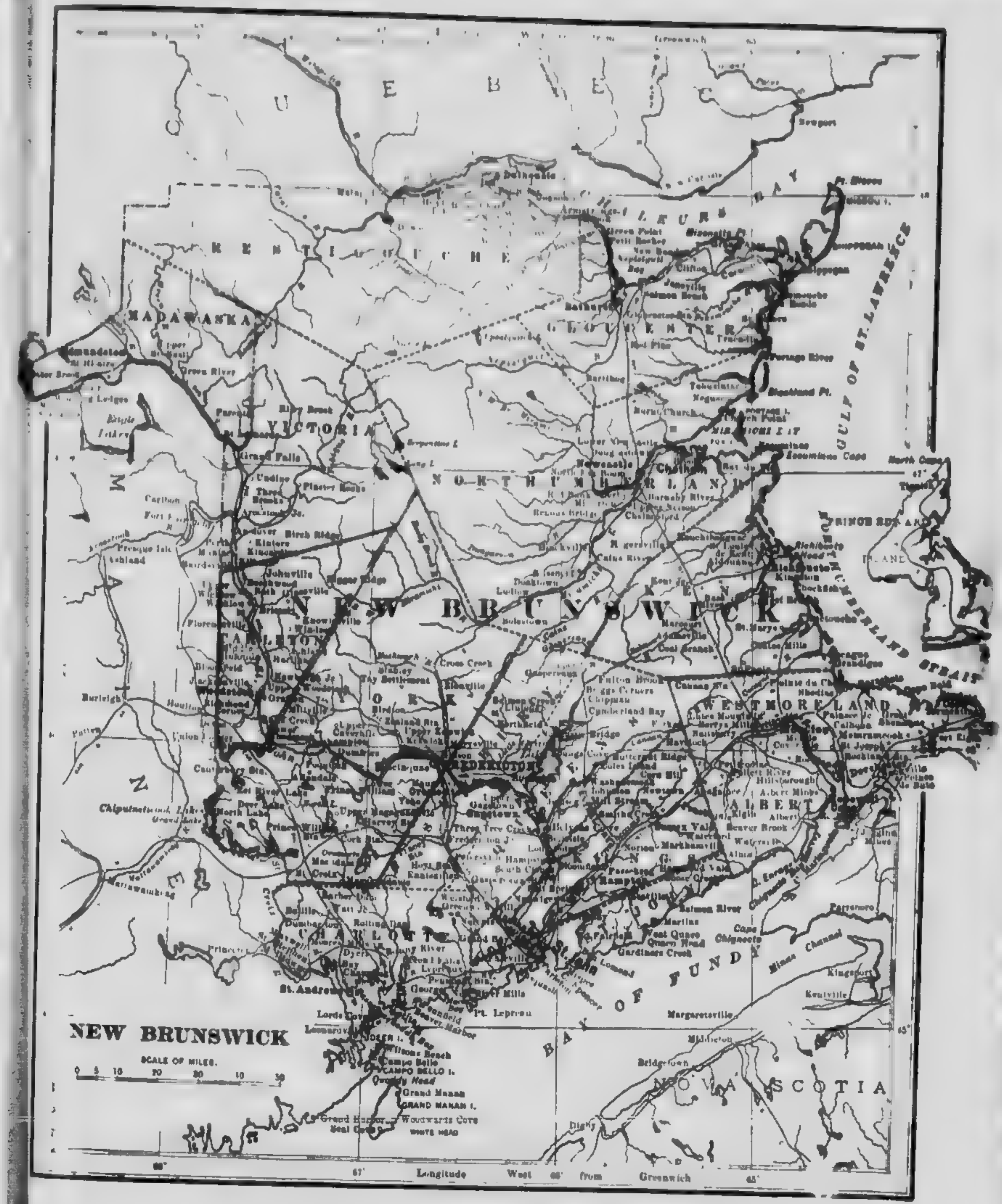
Cotton. Experience has shown that the prevailing climatic conditions are very favourable for manufacturing cotton. The facilities for bringing in the raw materials are excellent hence the cotton industry is flourishing, and there are large mills at St. John, Moncton, Marysville, and Milltown.

Iron. Although vast deposits of iron ore are found in the province, together with a sufficient supply of coal and limestone for smelting purposes, there are as yet no furnaces for the production of iron. However, foundries, rolling-mills, nail factories, and edge-tool factories are established at St. John and other places in the province.

Leather. New Brunswick is rich in hemlock forests, which supply the bark used in tanning leather. Hence there are many tanneries throughout the province, and the manufacture of boots and shoes is an important industry.

Mining. As yet the mining industry of the province of New Brunswick occupies a relatively unimportant position. The following minerals are known to exist in considerable quantities: coal, copper, iron ore, antimony, and gypsum.

The harbour at St. John.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RESTIGOUCHE
VICTORIA
GLOUCESTER
NORTHUMBERLAND
CARLETON
YORK
SUNBURY
QUEENS
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WESTMORELAND
ALBERT
KINGS
CHARLOTTE
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NEW BRUNSWICK
Fredericton
St. John
Chatham
Newcastle
Bathurst
Dalhousie
Campbellton
Edmundston
Grand Falls
Woodstock
Moncton
Dorchester
Sackville
Shediac
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St. Stephen
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Longitude West from Greenwich

Coal. About one third of the province belongs to the carboniferous formation. The principal coal-field is at Grand Lake, 20 miles east of Fredericton. Only one seam is of economic value, its average thickness being about two feet. Copper is widely diffused and mines have been worked in Charlotte County. Antimony is being mined in York County. Extensive deposits of gypsum are found along the coast of the Bay of Fundy, and about 100,000 barrels are manufactured each year.

Trophies of the chase.

HUNTING AND FISHING

New Brunswick has always been famous for its game. Moose, caribou, and deer are plentiful. There are also many fur-bearing animals, such as the beaver, muskrat, raccoon, marten, mink, and otter. Nearly all the streams and rivers abound in game fish, of which the salmon is the most important.

TRANSPORTATION

New Brunswick is well supplied with railways. The principal are the Intercolonial, the Canadian Pacific, and the Grand Trunk Pacific.

The *Intercolonial Railway* enters the province from Nova Scotia and runs in a north-westerly direction till it enters the province of Quebec. At Moncton it branches to St. John and Fredericton on the west, and to Shediac on the east. Other branches serve the chief places in the province.

The *Canadian Pacific Railway* has its eastern terminus at St. John. Its lines extend over 500 miles within the province.

The *Grand Trunk Pacific*, beginning at Moncton, proceeds in a north-westerly direction through Chipman and Edmundston into the province of Quebec.

Water Communication. Steamers ply on most of the rivers and on all the coast waters of the province. The city of St. John is connected by steamer with Portland, Me., and Boston, Mass.; with Halifax, Yarmouth, Digby, and other ports in Nova Scotia; and with the chief ports of Great Britain. Its export trade is second only to that of Montreal.

GOVERNMENT

The Government of New Brunswick consists of a *Lieutenant-Governor*, appointed by the Government of Canada, an *Executive Council*, and a *Legislative Assembly* elected for five years. The province is divided into fifteen counties, each of which is a municipality, governed by a council elected by the ratepayers.

CITIES

Fredericton, the capital, is situated on the right bank of the St. John, about 84 miles from its mouth. This city, formerly St. Anne's Point, was founded about 1740, received its present name about 1785, and became the capital of the province in 1788. Here are the Parliament Buildings, Provincial University, Normal School, and Infantry School. It possesses excellent railway and steamship communication with other parts of the province.

University of New Brunswick, Frederic n.

Among the industrial establishments of Fredericton may be mentioned saw-mills, tanneries, a shoe factory, carriage works, a foundry, and machine-shop.

Bridges at St. John, N. B.

St. John, the largest city and the commercial centre of New Brunswick, is situated at the mouth of the St. John River. It lies on both sides of the harbour. Adjoining St. John, and connected with it by a suspension bridge on the west, is the pretty suburb of Fairville. Just north is a fine cantilever railway bridge, and immediately beneath these bridges are the celebrated "Reversible Falls" of the St. John River. The city contains numerous saw-mills and factories, large pulp-mills and foundries. Its chief buildings are its schools, custom-house, post-office, hospital, asylum for the insane, and grain elevators. St. John has a fine harbour, open for navigation all the year round and, on account of its high tides, never obstructed by ice. This city is one of the great winter ports of Canada.

Moncton, the second largest city in the province, is situated on the Petitcodiac River. It is the head-quarters of the Intercolonial Railway, which has its workshops here. It is also the eastern terminus of the Grand Trunk Pacific. Moncton contains cotton and woollen-mills, and other industries.

TOWNS

Chatham, situated on the Miramichi, has an excellent harbour, a large lumber trade, and important manufactures, and is the centre of lumber and fishing industries.

Woodstock, situated on the St. John River, in the centre of a fine agricultural district, has important lumber-mills and wood-working factories.

St. Stephen, at the head of navigation on the St. Croix River, is the centre of important lumber interests. Adjoining it is *Milltown*, with one of the finest mills in the Dominion for the production of coloured cottons.

Newcastle, on the Miramichi River, at the head of deep water navigation, carries on a large lumber trade. In the neighbourhood are celebrated stone quarries.

Marysville, on the Intercolonial, has one of the largest cotton-mills in Canada, and its lumber-mills are of great capacity.

Sackville is the seat of Mount Allison University.

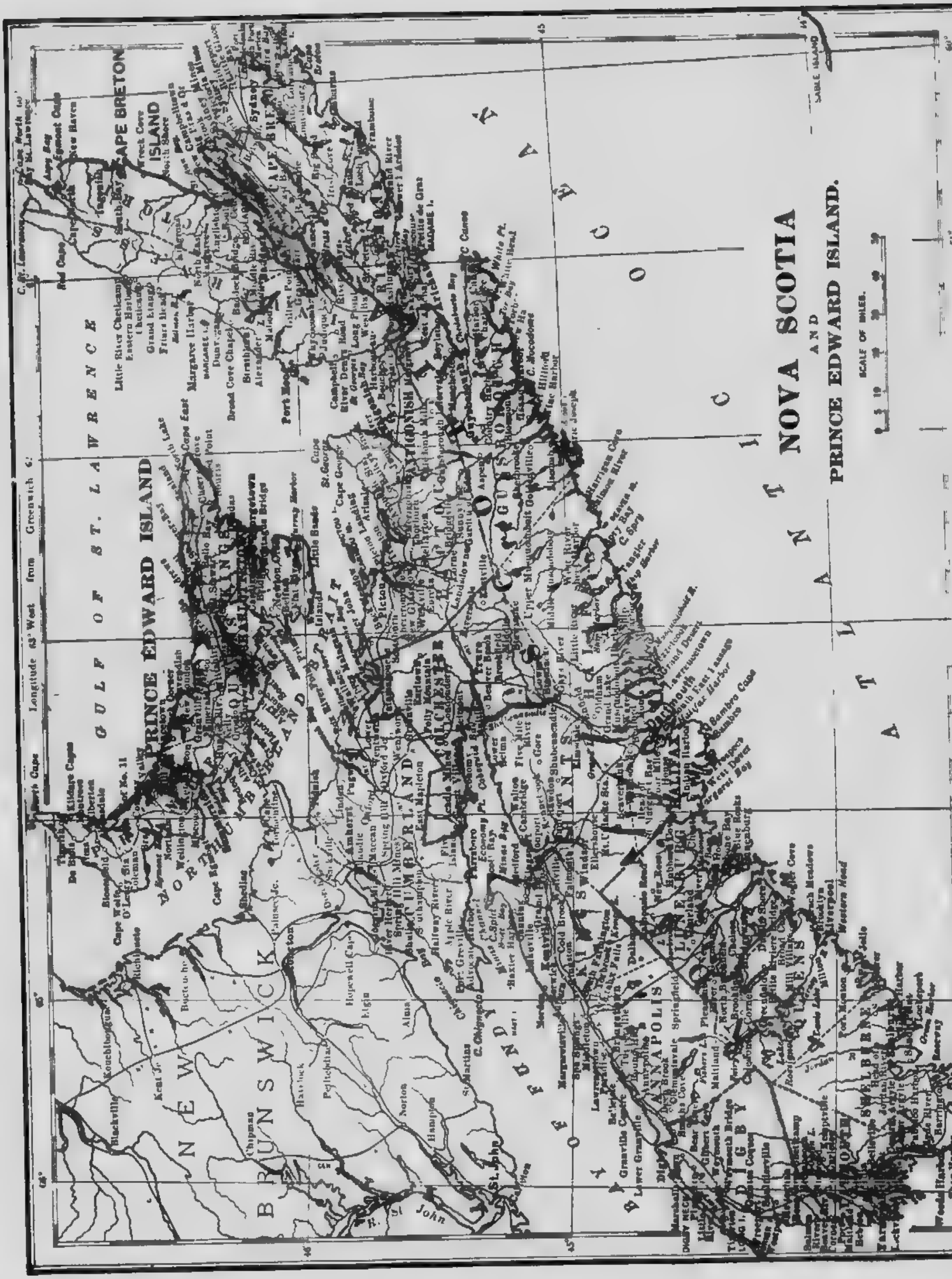
XXXIX. NOVA SCOTIA

Position. Although not the most eastern point of the Dominion, yet Nova Scotia is the most eastern province. The parallel of 45° north, which forms the southern boundary of a part of the province of Quebec, and which passes through the centre of France, nearly bisects the province. The whole country is south of the most southern part of England.

Size. The province consists of the peninsula of Nova Scotia and the island of Cape Breton. It is about 370 miles long and from 60 to 100 miles wide, and is the smallest but one of the provinces, having an area of about 21,000 square miles.

The "Tidal Bore" at Moncton, N. B.

Surface. A watershed runs through the whole length of Nova Scotia. The part of the peninsula south of this watershed and facing the Atlantic is in general rocky and



NOVA SCOTIA AND PRINCE EDWARD ISLAND.

barren, and nowhere does it rise more than 300 feet. Its broken rocky ridges are interspersed with countless lakes and streams.

The northern slope, lying toward the Bay of Fundy and the Gulf of St. Lawrence, is in the main arable and fertile. This part consists of rolling hills clothed with hardwood. In the west these rise to a height of from 500 to 700 feet. In the north, where in places they reach the height of 1,200 feet, they are known as the *Cobequid Mountains*, and stretch from Cape Chignecto to Cape Canso.

At Annapolis.

The northern part of Cape Breton Island is mountainous, with bold, rugged promontories, but the southern portion is low and level.

Drainage. From the conformation and size of the province, it is easily understood that there are no rivers of any considerable size. The streams, however, produce water-power, and their mouths form safe and commodious harbours. The most important of the rivers are the *Shubenacadie*, which rises near Halifax and flows northward into Minas Basin; and the *Annapolis*, which flows along the western edge of the peninsula into Annapolis Basin.

Soil. The agricultural lands lie chiefly along the bays and rivers of the northern slope. The Annapolis valley is celebrated for its fine apple orchards. The counties bordering on the head of the Bay of Fundy contain stretches of very fertile meadow lands protected by dikes from the tides. When a dike is opened the water flows in, bringing with it a rich deposit of mud, which makes the application of fertilizers unnecessary.

Climate. The climate of Nova Scotia is largely maritime in its nature. It is remarkably healthful and invigorating. There is an abundant rainfall, averaging about 44 inches a year.

People and Government. The present province of Nova Scotia, called Acadia in early times, was the scene of the first permanent French settlement in North America. In 1713 Nova Scotia passed into the hands of the British.

Of the present population of the province, some trace their descent to the early French settlers; some to European immigrants of a later date, as the Highland Scotch of Cape Breton and the north coast, and the German settlers in Lunenburg; many to the old New England Colonists and the United Empire Loyalists. The government is the same in form as that of Quebec.

Loading coal into cars from a storage bank.

INDUSTRIES

The chief industries are farming, fishing, mining, lumbering, and manufacturing.

Agriculture. The climate is such that all the crops of the temperate zone are readily grown. The farm crops are chiefly hay, oats, buckwheat, potatoes, and turnips. Toward the western part of the country, fruits, especially apples, are grown to great perfection.

Dairying is becoming a more important industry, and farmers are improving their stock by importing better breeds.

Fishing. Owing to its great length of coast-line and the abundance of fish in its coast waters, Nova Scotia is the leading province of the Dominion in this industry. Lobsters, cod, herring, haddock, and mackerel constitute the most important part of the catch. The fish are exported to Great Britain, Southern Europe, Brazil, and West Indies.

Mining. The most important minerals of Nova Scotia are coal, iron, gold, and gypsum.

Coal. The coal-fields are in Cumberland, Pictou, and in the island of Cape Breton. The coal is bituminous and is used in great quantities in the iron and steel manufactures of the province; it is also exported.

Iron. Iron ores and coal are found in the same districts; hence the manufacture of iron and steel has become one of the great industries of the province. The centres of this industry are Sydney and New Glasgow.

Main shaft of colliery, near Glace Bay, C. B., in which four cages are operated.

Gold. Gold is found in the quartz rocks at many different places along the Atlantic.

Gypsum. There are large deposits of gypsum in Cape Breton Island and in the district surrounding Minas Basin. This is used as a fertilizer and also in manufacturing plaster of Paris.

Lumbering. Although pine has practically disappeared from Nova Scotia, yet there are still large areas of spruce, fir, and larch, as well as such hardwoods as beech, birch, maple, and ash. Lumber is exported to Great Britain, South America, the West Indies, and the United States.

Piers in Sydney, C. B., where iron ore is received and steel is shipped.

Manufactures. The great manufacturing centres of Nova Scotia are Sydney, New Glasgow, and Londonderry, where iron and steel are produced.

Other industries are sugar-refining at Dartmouth, opposite Halifax; tanning leather; and the manufacture of boots and shoes, furniture, agricultural implements, cottons, woollens, and grindstones.

Transportation. The *Intercolonial Railway* serves all the northern and eastern parts of the province, and connects Halifax, Sydney, and New Glasgow with St. John, Quebec, and Montreal. The *Halifax and Southwestern Railway*, which connects Halifax and Yarmouth, runs through the south-western part of the province. From Bridgewater a branch crosses the peninsula to the Annapolis Valley.

The counties lying along the Bay of Fundy are served by the *Dominion Atlantic Railway*, which runs from Halifax to Yarmouth by way of Windsor and Digby.

Lines of steamships connect Halifax with the United Kingdom, the United States, and

Halifax, and harbour, from the Citadel.

the West Indies. Steamers also ply regularly between Pictou and Charlottetown; Sydney and St. John's, Newfoundland; Yarmouth and Boston, Digby and St. John, N. B.

CITIES

Halifax, the capital, was founded in 1749 by the British Government as a means of securing its hold upon Acadia. It is strongly fortified, and garrisoned by a regiment of Canadian troops. Halifax has a capacious dry-dock, and an excellent harbour, 14 miles long and nowhere less than 36 feet deep, free from ice all the year round. It is the seat of Dalhousie University, and the Provincial Institutions for the Blind and for the Deaf and Dumb. Among its industries are manufactures of agricultural implements, cottons, and woollens. Dartmouth, across the harbour from Halifax, has a large sugar refinery.

Sydney, on the east side of Cape Breton Island, is noted for its coal trade and its extensive production of iron and steel. In the neighbourhood are found the three materials necessary for the production of iron: iron ore, coal, and limestone.

TOWNS

Yarmouth, situated at the south-western extremity of the province, has extensive fishing interests and a large shipping trade. Steamers ply regularly between Yarmouth and Boston.

Truro, in the centre of a rich agricultural district, is the seat of the Provincial Normal School, and the Agricultural College.

Glace Bay, *Sydney Mines*, and *North Sydney*, in the County of Cape Breton, *Springhill* in the County of Cumberland, and *New Glasgow* in Pictou County, are coal-mining towns. At Glace Bay, near Sydney, is the principal station for wireless telegraphy across the Atlantic.

Pictou, the shipping port of New Glasgow, on Northumberland Strait, is a busy commercial town.

Amherst is a centre for the manufacture of cars, engines, furniture, and boots and shoes.

Windsor, on the Avon, is the seat of King's College, founded in 1790; and *Wolfville* is the seat of Acadia University.

XI. PRINCE EDWARD ISLAND

Position. The province of Prince Edward Island lies in the southern part of the Gulf of St. Lawrence. It is separated from Nova Scotia and New Brunswick by Northumberland Strait, which between Capes Traverse and Tormentine is only nine miles wide.

Size. The island is 150 miles in length and varies in breadth from 4 to 30 miles. Its area is about 2,000 square miles.

Surface. The country is uniformly undulating and everywhere well cultivated. No part is more than 500 feet above sea-level.

Drainage. All the streams are necessarily short, and the land being low, the tides flow to their head-waters. Hence, they become arms of the sea rather than rivers. Three such streams converge in Charlottetown harbour, forming Hillsborough Bay.

Climate. The climate is not wholly insular, for although the province is an island, yet it is sheltered from the influence of the outer ocean by the shape of the surrounding shores. The summers are warmer, and the winters colder, than those of Nova Scotia.

Old Fort Annapolis, N. S.

Spring is retarded on account of the ice floating in the Gulf. The autumn, however, lingers long, and the harbours do not freeze up until about the middle of December.

Soil. The soil is a rich, open, sandy loam of a red colour. It is admirably fitted for growing oats, other grains, and potatoes; these are the staple crops of the island.

Delivering milk at a creamery.

INDUSTRIES

Agriculture. The dairy and stock-raising industries have taken the place of wheat-growing; and cheese factories and creameries are numerous.

Oats and potatoes are grown for export, and Indian corn and roots for fodder. Fine horses, cattle, sheep, and hogs are produced and exported in considerable numbers.

Fisheries. The shallow waters near the Island are the feeding grounds for immense shoals of food-fish; hence, the fisheries are almost entirely inshore. The chief catches are cod, mackerel, herring, lobsters, and oysters.

Minerals. Prince Edward Island has no minerals of importance.

Manufactures. The chief manufactures are those connected with the preparation of foods, such as cheese, condensed milk, and pork.

Transportation. Except in winter, lines of steamers ply daily between Charlottetown and Pictou, and between Summerside and Pointe du Chene in New Brunswick. Weekly steamers connect Charlottetown with Montreal, St. John's, Halifax, and Boston. Winter communication is maintained by powerful steamers which run between Georgetown and Pictou, a distance of 30 miles.

The *Prince Edward Island Railway*, which is owned by the Dominion, runs from end to end of the island between Tignish on the west and Souris on the east, and has branches to the chief places.

People. The island is the most thickly populated of the provinces. The people are for the most part descendants of Scottish, English, Irish, and French settlers.

Government. The government is vested in a *Lieutenant-Governor*, appointed by the Governor-General in Council, an *Executive Council*, and a *Legislative Assembly*. The Legislative Assembly has one half of its members elected by the property owners; and one half elected practically by every man over twenty-one who is legally qualified to vote, whether he has property or not. The island is divided into three counties, but it has no municipal institutions for local government, such as there are in Ontario.

Dominion Government steamship (ice-breaker), crossing Northumberland Straits in winter time.

CITIES AND TOWNS

Charlottetown, the capital and only city, is situated on the north side of a fine harbour at the mouth of a long inlet known as Hillsborough Bay. It is the seat of Prince of Wales College and the Normal School. Since Charlottetown is the chief terminus of the Prince Edward Island Railway, through it passes the greater part both of the exports and imports of the province. One of the largest and best equipped pork-packing establishments in the Dominion is located here.

Summerside, at the head of Bedeque Bay, on an excellent harbour, ships a part of the products of the western section of the province, and is the centre of the oyster industry.

Georgetown, in King's County, has a fine harbour.

Acadia. Nova Scotia, New Brunswick, and Prince Edward Island are known as *Acadia*, or more generally the *Maritime Provinces*.

Queen's Square, Charlottetown, showing market, post-office, parliament buildings and court-house.

XLI. MANITOBA

Position and Extent. Manitoba lies nearly in the centre of the land mass of the continent of North America. It is almost exactly midway between the eastern and western extremes of the Dominion. It extends from the 49th parallel northward to the 60th, and from Ontario westward to the province of Saskatchewan. Its area is about 252,000 square miles.

Surface. The eastern part of the province lies in the Laurentian Plateau and partakes of the characteristics of this region. It is rocky and hummocky, well wooded, and abounds in lakes. All the central and southern part of the province was, it is supposed, at one time the bottom of an old lake of great size called Lake Agassiz. This part is remarkably level and gives to Manitoba the name of the Prairie Province. It is wooded only along the banks of the streams. In the west an escarpment about 500 feet in height enters the province under the name of the Pembina Mountain, and continues northward and westward as the Riding, Duck, and Porcupine mountains. This escarpment is the front of the second prairie steppe which occupies all the south-western part of the province.

Drainage. There are three main slopes in the province: the general slope from south to north of about a foot in a mile; the slope from the east down to the Red River and Lake Winnipeg; and that from the west down to the same waters.

The *Red River* and its tributaries, the chief of which are the *Pembina* and the *Assiniboine*, drain all the central and southern part of the province into *Lake Winnipeg*.

A Manitoba farmhouse.

The Red River rises in the State of Minnesota and after a very winding course of about 700 miles, one seventh of which is through Manitoba, flows into Lake Winnipeg.

The *Winnipeg River*, the outlet of the Lake of the Woods, drains the eastern part of the province into Lake Winnipeg. This river has many rapids, some of which are being utilized to generate electricity for the city of Winnipeg.

In the central part of the province there are several large lakes, the remains of old Lake Agassiz which originally occupied the whole of the Red River valley. The largest are *Lake Winnipeg*, 250 miles long and from 25 to 60 miles wide; *Lake Manitoba*, lying near the centre of the province and extending north and west 120 miles; and *Lake Winnipegosis*, with its many bays and inlets. All these are shallow lakes with waters rendered turbid by the large amount of detritus carried into them by the Red and other rivers. Their outlet is the Nelson River.

Soil. In the Red River valley the soil is a deep, alluvial deposit of unsurpassed richness, which produces bountiful crops of wheat, oats, barley, roots, and nutritious grasses. On the upland, the soil is generally a black loam from one to five feet deep, but there are gravel ridges; and in the south-west of the province, the soil becomes a light, sandy loam.

A barley crop in Manitoba, ready for shipment.

Climate. Manitoba has a typical continental climate. The winters are clear, very cold, and invigorating, with a moderate amount of snowfall. The summers are hot with cool nights. April and May are delightful spring months; June and July bring summer rains during which vegetation grows with amazing rapidity. August and September are the hay and harvest months. In the autumn the skies are clear and the air dry and bracing.

People. At the time of Confederation, the inhabitants were chiefly Indians and half-breeds. Shortly after Manitoba became a province, a rush of settlers from eastern Canada and Europe began and has continued ever since. Hence the population is a mixture of many nationalities, of which the English, Irish, Scottish, French, Icelandic, and Scandinavian are the chief.

Threshing on the prairies.

INDUSTRIES

Agriculture. Both the soil and the climate of Manitoba are suited to agriculture, so that the most important industries of the province are connected with farming. The principal grain is wheat, for which Manitoba is famous the world over. In addition to wheat, oats and barley are extensively grown as well as a considerable quantity of flax. After being threshed, the wheat is stored in tall buildings called elevators. Almost every village and town has a number of these. From the elevators the grain is shipped on cars to the mills or to some eastern point, as Port Arthur or Fort William, where immense elevators have been erected.

Mixed farming is, however, becoming increasingly popular, hence dairy-farming and cattle-raising are receiving more and more attention. The principal exports from Manitoba are wheat, cattle, and dairy products.

Reaping grain in Manitoba.

Fishing. The lakes of Manitoba abound in fish. The annual catch is large and a profitable export trade to the United States has been established. The chief varieties taken are whitefish, pickerel, pike, trout, and sturgeon.

Parliament Buildings, Winnipeg.

Lumbering. There is an extensive spruce forest country lying north of the prairie belt in Manitoba, and large numbers of lumbermen are employed in the camps, and in the saw-mills at Selkirk, Winnipeg and other places.

Mining. Manitoba is not very rich in minerals. Deposits of iron ore are found on the shores of Lake Winnipeg, but at present it is not mined. Although a soft coal is found in the south-western part of the province, it is not yet extensively used. Limestone for building purposes is plentiful, and there is clay suitable for the manufacture of the finest bricks in several parts of the province. There are deposits of gypsum north of Lake St. Martin, whence the raw material is brought to Winnipeg and manufactured into hard wall plaster and plaster of Paris.

Manufacturing. What manufactures Manitoba possesses are mainly connected with the agricultural interests of the country. Mills in almost every village produce flour, not only for home consumption but also for export to Great Britain, the United States, China, Japan, and even South Africa. Machine-shops for the manufacture of farming implements and of wire-fencing are now established at Winnipeg, and Brandon. A plant for the manufacture of iron and steel structures is in operation in Winnipeg. Many artisans are employed in Winnipeg and other places in the production of leather goods and carriages of various kinds.

Transportation. Southern Manitoba is better supplied with railways than any other part of the Dominion. At the present time there are four great systems operating in the Province: the Canadian Pacific, the Canadian Northern, the Grand Trunk Pacific, and the Great Northern.

The Canadian Pacific, the Canadian Northern, and the Grand Trunk Pacific connect Manitoba with the east and the west, as well as with the large cities of the United States to the south. The products of the farm are increasing so rapidly that these lines are taxed to their utmost capacity to move them before the next season's crops.

Government. The government is like that of Ontario, there being only one Legislative Chamber.

CITIES

Winnipeg, the commercial metropolis, the chief railway, and distributing centre of the province, is the capital. It stands at the junction of the Assiniboine and Red rivers on the site of old Fort Garry. Among its fine buildings are the city hall, the post-office,

Main street and City Hall Square, Winnipeg.

Building and grounds, Brandon, in which winter fair is held.

the general hospital, the legislative buildings, the Canadian Pacific station and hotel, and the Carnegie Library. It has large stock yards to accommodate the growing cattle trade, and an abattoir. The construction and repair shops of the Canadian Pacific and the Canadian Northern railways are situated here. Its manufactures include the production of malleable iron and steel structures, flour, leather goods, wire-fencing, woodwork, and carriages. It is the seat of the Provincial University, the Provincial Institute for the Deaf and Dumb, the Normal School, and St. John's, Manitoba, and Wesley Colleges. Near it is the Agricultural College.

Brandon, situated on the south side of the Assiniboine River, and on the main line of the Canadian Pacific Railway, 133 miles west of Winnipeg, is the centre of a rich farming district. It is the seat of Brandon College, an Indian Industrial School, an Asylum for the Insane, and a Dominion Experimental Farm. The principal manufactures are flour, woollen goods, and machinery.

Portage la Prairie, on the main line of the Canadian Pacific and the Canadian Northern railways, 50 miles west of Winnipeg, is a typical western city. It is surrounded by a fine farming district and it has large grain elevators and flour-mills. An Indian Industrial School and the Provincial Home for Incurables are situated here.

TOWNS

St. Boniface, on the east side of the Red River, opposite Winnipeg, is a rapidly growing town, almost entirely French. It is the seat of St. Boniface College, and has a fine hospital, and a magnificent cathedral.

Morden, on the Pembina branch of the Canadian Pacific Railway, has a hospital, grain elevators and grist-mills. Near it are marl-beds, from which cement is made.

Selkirk, 24 miles north of Winnipeg on the Red River, at the head of Lake Winnipeg navigation, and near the main line of the Canadian Pacific Railway, is the centre of a good agricultural country. It has flour and saw-mills, a Dominion fish hatchery, and cold storage warerooms for fish. It is connected with Winnipeg by an electric railway as well as by the Canadian Pacific Railway.

Carman, Boissevain, Deloraine, Souris, Carberry, Virden, and *Neepawa* are centres of good wheat districts.

Agricultural college, near Winnipeg.

XLII. SASKATCHEWAN

Position and Extent. The Province of Saskatchewan lies between Manitoba on the east, and Alberta on the west. It stretches from the international boundary line on the south to the 60th parallel on the north. It is about 750 miles in length, and varies in width from 400 miles at the south to about 250 miles at the north Its area is about 250,000 square miles.

Surface. The greater part of the province lies in the second prairie steppe, which has an average width of 250 miles and an average elevation of 1,600 feet above sea-level. This steppe is in general more rolling, and the river valleys are wider and more deeply cut than in Manitoba. In addition to the hills forming the boundaries of the steppes there are some isolated elevations locally known as "buttes." Among these in the southern part of the province are Moose Mountain and the Touchwood Hills.

In various parts of the province there are basins which, though they have no outlet, are kept from overflowing by evaporation. The water in these is alkaline and unfit for drinking. In the north the country is well wooded. The 53rd parallel marks approximately the boundary between the wooded northern country and the southern "bluffy," open prairie.

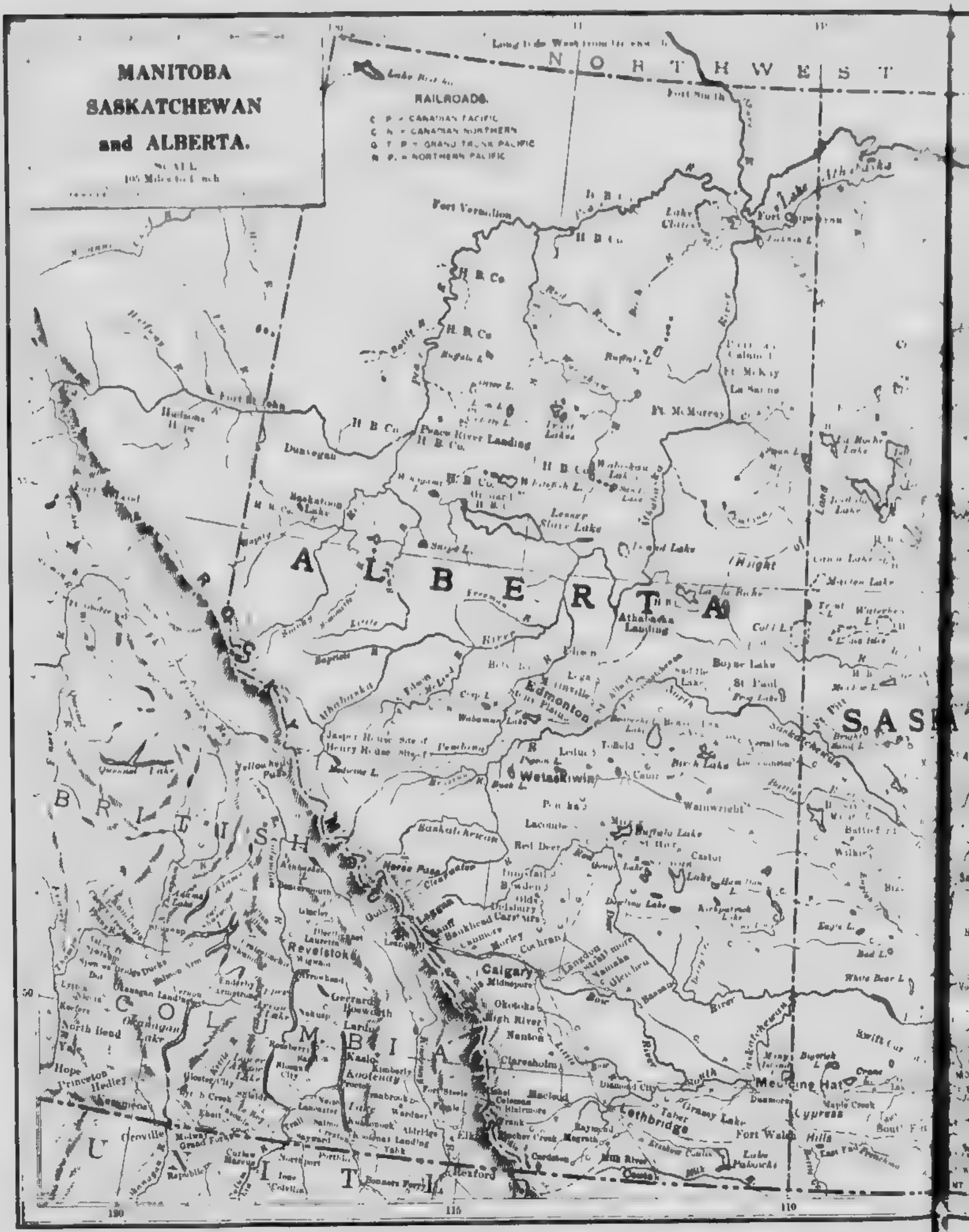
A "windbreak" on the prairies.

Drainage. The general slope of the province is toward the east, with a slight dip to the north. In the south the *Souris* and the *Qu'Appelle* drain the "sloughs" into the *Assiniboine River*. The central part of the province is drained by the north and south branches of the *Saskatchewan*. In summer, the Saskatchewan, fed by the melting snows of the Rockies, is a large river. Its name means "rushing water." The country between the basins of the Saskatchewan and the *Athabaska* is drained by the *Churchill* into Hudson Bay. The country north of the height of land is drained by the Athabaska, and ultimately the waters of this region reach the Arctic Ocean. These rivers often flow through deep, broad valleys which they have formed in the alluvial soil.

Stacks of wheat on the level prairie land of Saskatchewan.

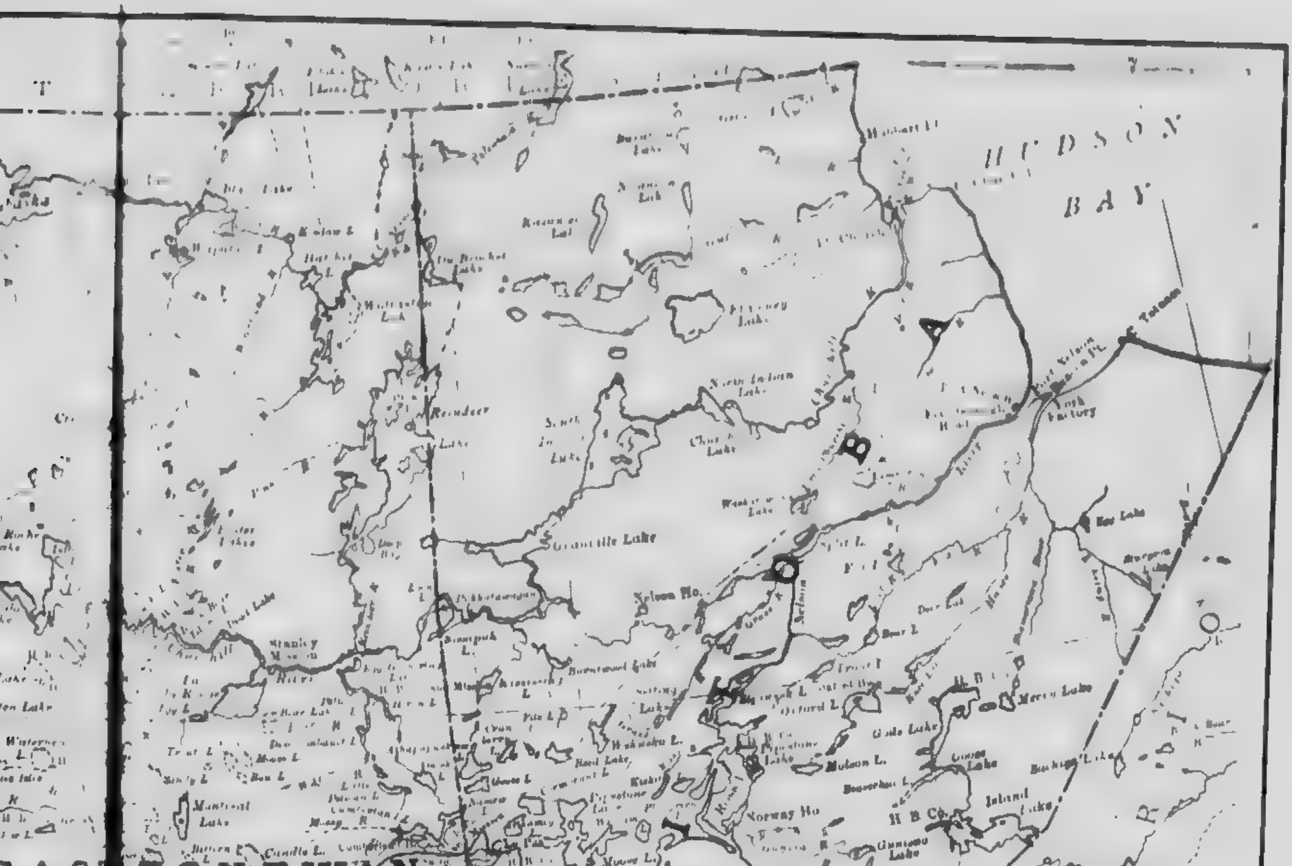
Soil. In general the soil is wonderfully fertile. In various places throughout the province there are stretches of alkaline waste alternating with immense areas of rich arable land. Where the rainfall is sufficient, large crops of wheat, barley, and oats are grown.

Climate. Saskatchewan furnishes a typical example of a continental climate. Owing to its remoteness from any large body of water it is subject to extremes of heat and cold. In the eastern part of the province the climate resembles that of Manitoba, although in the west and south-west the winter is somewhat milder. In general, the



MANITOBA
SASKATCHEWAN
and ALBERTA.

SCALE.
105 Miles to 1 inch


HUDSON BAY
SASKATCHEWAN
MANITOBA
ONTARIO
STATES
Lake Winnipeg
Winnipegosis
Manitoba
Winnipeg
St Boniface
Portage la Prairie
Brandon
Regina
Moosejaw
Saskatoon
Dauphin
PORCUPINE MTN.
DUCK MT
RIDING MT
Swan River
Cedar Lake
Norway Ho
Nelson Ho.
York Factory
Granville Lake
Reindeer Lake
Island Lake
Montreal Lake
Emerson
Estevan
Lake of the Woods
Rainy R
Yellow Grass
Weyburn
Wishart
Strassburg
Qu Appelle
Indian Head
Grenfell
Minnedosa
Isafold
Trout Lake
Stanley Mission
Candle L.
H B Co.
106
102
100
95

winter is cold and steady, but on account of the dryness of the atmosphere its severity is not felt as in the eastern provinces. At this season, there are occasional blinding storms of snow accompanied by high winds. These are the "blizzards" which, while they last, render travelling not only difficult but extremely dangerous. In July and August the days are hot, but the nights are cool and pleasant. The time of greatest rainfall is the months of June and July. The precipitation is greatest in the north and east, where it averages about 15 inches a year; and least in the west and south-west, where it rarely exceeds 12 or 13 inches.

People. The majority of the people are of Anglo-Saxon origin. There are, however, settlements of French, German, Russian, and other nationalities. The Indians and half-breeds now form only a small fraction of the population.

Parliament Buildings, Regina.

INDUSTRIES

Agriculture. Eastern and south-eastern Saskatchewan is becoming one of the greatest wheat-producing sections of America. The hard wheat of the Scotch Fyfe variety, highly prized by millers, grows to great perfection. This is the result of a soil rich in nitrates, a dry climate, which ensures the absence of rust, and the large amount of sunshine due to long days and clear skies of summer. The wheat is stored in elevators, as in Manitoba. Barley, oats, and flax-seed, are also grown in great quantities.

Ranching. The south-western part of the province, from Swift Current to Alberta, is chiefly a ranching country. Cattle, horses, and sheep thrive the whole year round on the short, crisp herbage known as buffalo-grass. In the spring and early summer this is green and juicy; later on it withers, and, by reason of the dry atmosphere, is cured on the stalk, and thus retains its nutritious qualities.

Dairying. This industry has been making great progress during the past few years. The government of the province has established creameries. These are managed on the co-operative plan by skilled agents.

Lumbering. The northern part of the province is covered by vast forests of spruce, tamarack, birch, and some jack pine; hence north of the Saskatchewan River lumbering is extensively carried on and saw-mills are in operation. Prince Albert is the centre of this industry.

Fur Trade. In the north the fur trade is still important and the Hudson's Bay Company retains many trading posts in this region, to collect pelts. These are shipped from Prince Albert and Battleford to England.

Mining. The Souris district in the south-eastern part of the country, contains lignite coal, which is mined in paying quantities. In the south-western part, clay ironstone is found near the Cypress Hills, but it is not yet mined.

Manufacturing. There are flour-mills in almost every town. Pressed brick works and cement factories are common.

Transportation. Three great systems of railways are operated in Saskatchewan. These are the Canadian Pacific, the Canadian Northern, and the Grand Trunk Pacific. The main lines of these railways cross the province from east to west, and branch lines connect important places with the main lines. The Saskatchewan is the only river used as a means of transportation. Steamers of considerable size are employed both east and west of Prince Albert.

Government. The government is like those of Ontario and Manitoba. The legislative assembly, unless dissolved by the Lieutenant-Governor, continues for four years

CITIES

Regina, the capital, is situated on the main line of the Canadian Pacific Railway, 358 miles west of Winnipeg. Its railway connections north and south, as well as east and west, by means of this railway and the Canadian Northern, render it a leading commercial and distributing centre. It is surrounded by one of the finest wheat areas of the West. Its industries are already varied, including flour-mills, foundries, and machine-shops. It is the headquarters of the Royal North-West Mounted Police, and the seat of the provincial Normal School, an Indian Industrial School, land and registry offices, a court-house, and hospitals.

Royal North-West Mounted Police barracks, Regina.

Moosejaw, forty miles west of Regina, on the main line of the Canadian Pacific Railway, is an important railway centre. It is the terminal point of a branch of the Soo line which runs to St. Paul, Minneapolis, and Sault Ste. Marie. It has large stock-yards, flour-mills, and elevators.

Prince Albert is beautifully situated near the centre of the province, on the north branch of the Saskatchewan, a short distance west of its junction with the south branch. By means of the Canadian Northern Railway it has southern and eastern connections. It is an important centre of the lumber industry. It is the main point whence the fur and fish of northern Saskatchewan are shipped, and supplies distributed to the Hudson's Bay posts in the vast territory to the north.

Saskatoon, on the South Saskatchewan, is the chief place on the Regina and Prince Albert branch of the Canadian Northern. The main line of the Grand Trunk Pacific passes through it, and the Canadian Pacific has a branch connecting it with its main line at Portage la Prairie. It is thus an important railway centre, and a distributing point for an extensive agricultural area. The Provincial University and the Agricultural College and Farm are situated here.

TOWNS

Indian Head, on the main line of the Canadian Pacific Railway, is one of the oldest towns in the province, and the centre of a rich agricultural country. Here is the Dominion Experimental Farm. The town has flour-mills, elevators, and sash and door factories.

Moosomin, Broadview, Grenfell, Whitewood, Wolseley, Qu'Appelle, Rosthern, and *Gainsboro*, are the business centres of extensive and important wheat-growing districts.

Yorkton, on the Minnedosa branch of the Canadian Pacific, is an important centre for shipping cattle, and for dairy interests.

XLIII. ALBERTA

Position and Extent. Alberta is bounded on the east by the province of Saskatchewan, on the west by British Columbia, on the south by the international boundary line, and on the north by the 60th parallel. It is about 750 miles long by from 200 to 400 miles wide, and has an area of about 250,000 square miles.

Surface. With the exception of the area covered by the mountains and foot-hills, which extend for over 50 miles into the province, the part of Alberta south of the North Saskatchewan River lies in the third prairie steppe. The prairie is diversified. The rivers flow at a depth of two or three hundred feet below its general surface. From all the rivers there run at right angles, sometimes for miles into the prairie, narrow, deep ravines, which were at one time tributary watercourses. These are the "coulées" of the West.

Among the prominent peaks of the mountain area are Brown, 16,000 feet, Murchison, 13,500 feet, and Hooker, 13,500 feet.

A corral of horses in Alberta.

North of the North Saskatchewan, Alberta consists for the most part of an undulating plain diversified here and there by groups of low hills.

The southern part of the province is treeless, except along the river banks and among the mountains. In the central parts, except in the river valleys, which are thickly wooded, scrub and light timber alternate with prairie stretches. In the northern part, between the Peace and Athabaska rivers, forest areas occur. The upper valley of the Peace is open; and the country beyond, either open, or covered with light patches of scrub.

Drainage. There are three great drainage systems represented in Alberta. The Peace and the Athabaska, with their tributaries drain the northern half of the province. This system includes a number of lakes, notably Lake Athabaska. The Athabaska is a magnificent stream, navigable for steamers in long stretches between rapids.

The Northern Saskatchewan, with its tributary, the Battle River, and the South Saskatchewan, with the Bow and other tributaries, drain the central and southern part into Hudson Bay. A narrow strip of the southern boundary is drained by the Milk River into the Mississippi system.

The lakes in the southern part are usually isolated shallow basins, some of which have water for only a part of the year and are known as "sloughs."

Soil. In general, Alberta is an immense area of fertile land, the soil in many places consisting of from one to three feet of black vegetable mould with little or no sand or gravel. Along the eastern boundary toward the south there are small areas of sand.

Climate. The climate of Alberta is more moderate than that of Saskatchewan. The summer is not marked by very high temperatures, and the severity of the winter is moderated by westerly winds. The rainfall, except in the south, is sufficient for agriculture.

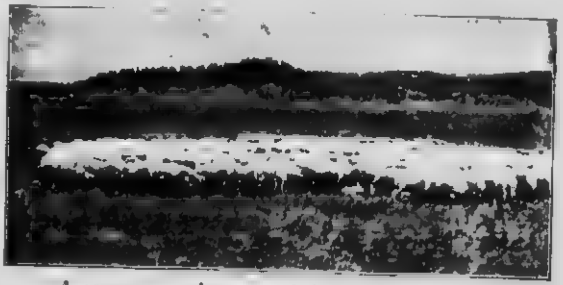
The milder climate of Alberta is due to the Chinook winds. These are warm, dry, southwest winds which get their name from passing over the country of the Chinook Indians in southern British Columbia. They come from the ocean and are vapour-laden. In their passage across the mountains, they have to rise from the sea-level. The diminished pressure causes them to expand. The expansion lowers their temperatures. As this air reaches high altitudes the moisture contained in it is condensed by the cold. The condensation of the vapour renders the heat used in the earlier evaporation sensible. Now, when the air descends on the east side of the mountains, the increasing pressure to which it is subjected causes an increase of sensible heat. This increase is over and above the heat made sensible by condensation of vapour on the western side of the mountains. Hence, at the same altitudes, the temperature of the air is higher on the east than on the west side. These winds, being thus dry and warm, clear away the snow with amazing rapidity, and at times bring April and May weather into the depth of winter. Their influence is felt as far east as Maple Creek in western Saskatchewan.

A cattle ranch in Alberta.

People. The people are of similar origin to those of Saskatchewan.

INDUSTRIES AND RESOURCES

Agriculture. Alberta is essentially an agricultural country. Wheat is grown from the international boundary to the Peace River. Winter wheat, oats, barley, flax, alfalfa, and all classes of roots flourish.



A scene on a sheep ranch in the grazing region.

Ranching, which in the past has occupied a very prominent place in southern Alberta, is giving place to agriculture. Districts which were thought to be too dry for successful cropping are giving satisfactory results under the methods of "dry farming," by which moisture is conserved in the land by forming a mulch of fine soil upon the surface of the field. To preclude the possibility of failure, however, irrigation systems have been established in the Lethbridge, Calgary, and Medicine Hat districts. The cultivation of sugar-beets and alfalfa is attaining great prominence in these irrigated districts.

Dairying. The government has established a number of creameries throughout the province, which are managed on the co-operative plan. The products are shipped to British Columbia, the Yukon, and even to China and Japan.

Mining. Alberta has vast coal areas. The quality of the coal varies from semi-bituminous to anthracite, which is as good as that of Pennsylvania. The mines worked at present are on the Crowsnest Railway, on the Canadian Pacific near Banff, and at Edmonton.

Oil is found in the southern part of the province and along the Athabasca River.

Gas flows in extraordinary abundance at Medicine Hat, and is used for fuel, power, and light.

Lumbering. This industry is confined to the northern and central parts of the province. In central Alberta the river valleys are well timbered with spruce and poplar. In the north, areas of jack pine, spruce, and poplar are found, but the supply of lumber for home use is insufficient both in kind and quantity.

Fur Trade. Edmonton is the centre of the fur trade. The Mackenzie basin, which includes the valleys of the Peace and Athabaska rivers, yields about one million dollars worth of pelts a year. These include pelts of the beaver, marten, otter, fox, musk-ox, lynx, and wolf.

Fishing. The lakes and rivers of the northern part of the province abound in whitefish, trout, pike, and pickerel.

Transportation. The three great systems of railway operating in Saskatchewan also operate in Alberta. These connect the province with the east and the west. Another road is to be built northward through the Peace River country.

Government. The government of Alberta is like that of Ontario. The legislature is elected for four years, but it may be dissolved at any time by the Lieutenant-Governor, who is appointed by the Dominion Government.

Hudson's Bay Company's old fort, Edmonton.

Irrigation canal at Calgary.

CITIES

Edmonton, the capital, is beautifully situated on both sides of the north branch of the Saskatchewan. It is on the main lines of the Canadian Northern and Grand Trunk Pacific railways, and is the terminus of the Macleod and Edmonton branch of the Canadian Pacific. It is the distributing point for supplies to the Mackenzie Valley, and is one of the greatest fur trade centres in the world. The Provincial University occupies a commanding site on the south bank of the river. It is surrounded by a country with soil of great depth and fertility.

Calgary, on the main line of the Canadian Pacific Railway and on the branch running from Macleod to Edmonton, is situated at the junction of the Bow and Elbow rivers. It is an important live stock centre

That part of the surrounding country which is irrigated is devoted mainly to intensive farming. Calgary is the seat of the provincial Normal School and is an important milling, manufacturing, and railway centre.

Medicine Hat, on the South Saskatchewan River and on the main line of the Canadian Pacific, near the junction of the Crowsnest branch, is an irrigation centre. It is now surrounded by an important mixed-farming district. The neighbourhood supplies coal and natural gas.

Lethbridge, on the Belly River and the Crowsnest branch of the Canadian Pacific, is the headquarters of the Alberta Railway and Irrigation Company's line. It is the centre of an important irrigated district and has extensive coal mines. It is the main distributing point for southern British Columbia.

Wetaskiwin, situated on the Battle River, 40 miles south of Edmonton, is in the centre of a rich agricultural area and has large elevators.

TOWNS

Raymond, situated on an irrigation canal, is the centre of the sugar-beet industry. It has a sugar-beet refinery, flour-mill, elevator, etc.

Macleod is situated in a fertile agricultural and ranching region on the Crowsnest Railway. A branch of the Canadian Pacific connects it with Calgary and Edmonton.

Banff is on the Bow River in the Rocky Mountain National Park, eighty miles west of Calgary. Its beautiful scenery, hot springs, and excellent hotel accommodation attract many tourists. Near it at Canmore, are anthracite coal mines.

Red Deer, on the Red Deer River, between Edmonton and Calgary, is the largest town in the province.

Lacombe is the site of a Dominion Government experimental farm.

Pincher Creek, *Magrath*, *Cardston*, and *High River* are important centres of farming industries. At present the dairy interests of the district are centred about *Olds*, *Carstairs*, *Didsbury*, and *Innisfail*

University of Alberta, Edmonton.

XLIV. BRITISH COLUMBIA

Position and Extent. British Columbia lies between Alberta and the Pacific Ocean and between the international boundary line and the 60th parallel. On the mainland it has a length of about 750 miles and an average width of about 425 miles. Its area is about 357,000 square miles

Surface. The whole of the mainland consists of several series of mountain ranges between which are elevated table-lands, long valleys, and numerous rivers or lakes. In parts there are rolling plains and low hills, with clumps of trees and bunch grass. In other parts there is row upon row of steep, forbidding mountains, with timber-covered sides and rugged canyons, deep river-beds and long, narrow lakes between them. The scenery is in general majestic and compares favourably with Switzerland for beauty and grandeur.

A high, level "park." The valley has been partially filled by the detritus from the mountain side

The coast-line of British Columbia is remarkable for the number of deep, narrow inlets. These are peculiar to a sinking coast. They resemble the fiords of Norway and are the drowned valleys and canyons of the foot-hills of the coast range.

Fraser River canyon.

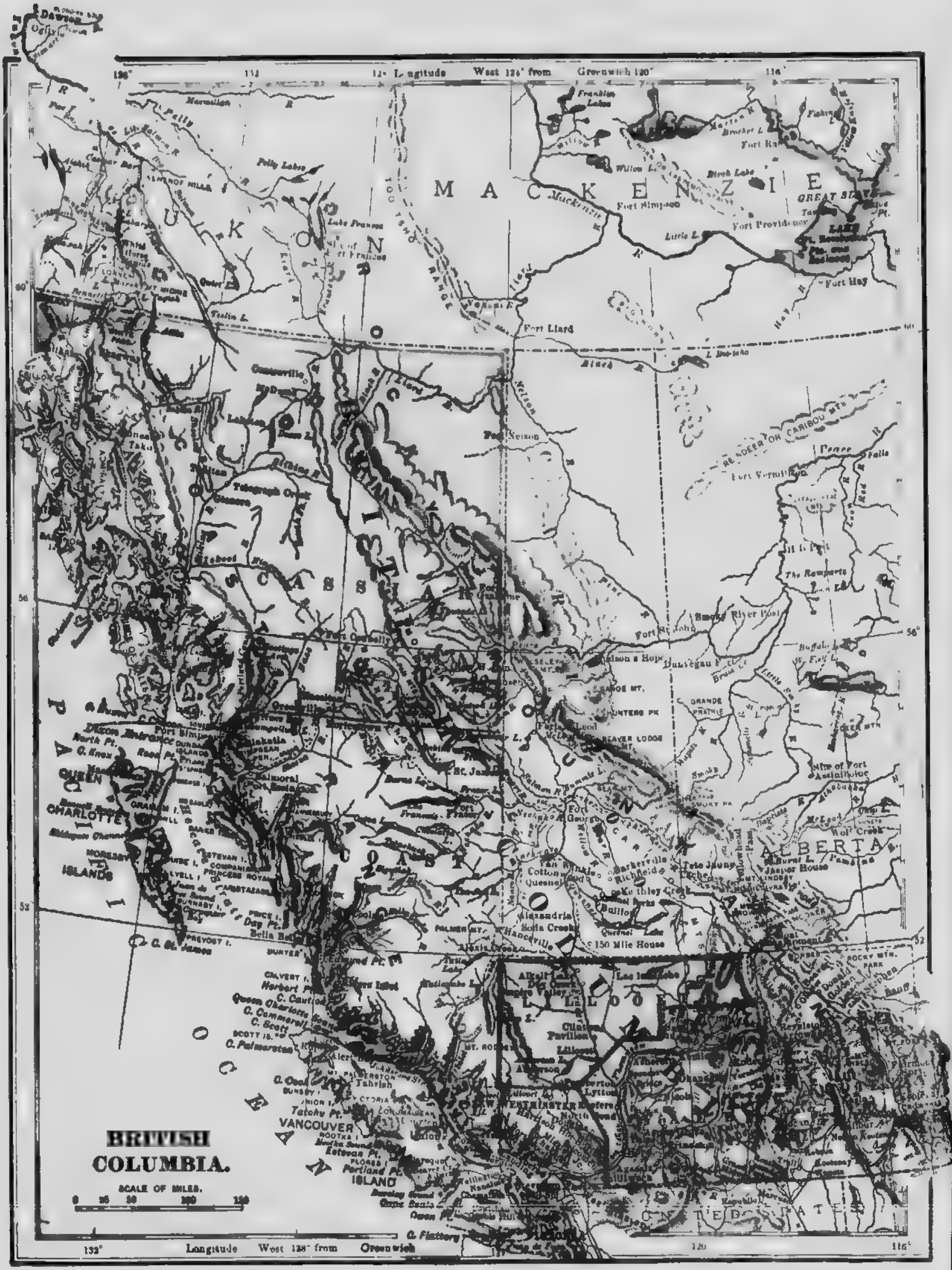
The Vancouver range of mountains on the island of that name, is much lower than that on the mainland, the highest having an elevation of about 7,500 feet.

Drainage. All the great rivers of North America west of the great plains, except the Colorado, have their source in British Columbia. There are parts of several great river basins in the province.

The *Columbia* rises on the western slopes of the Rockies and flows first north-westward; then it makes a great bend around the Selkirks and turns southward; broadening into Upper and Lower Arrow Lakes, it crosses the boundary into the United States, and, turning westward, flows into the Pacific Ocean.

The *Fraser.* The Fraser also rises on the western slopes of the Rockies near the Yellowhead Pass, and after a course of about 740 miles flows into the Strait of Georgia. The largest among the many tributaries of the Fraser is the Thompson. At the mouth of the Fraser is a delta ten miles long.

The north-eastern section of the province forms a part of the Mackenzie River basin and is drained by the *Peace* and *Liard* rivers.


BRITISH COLUMBIA.
SCALE OF MILES.
Longitude West 128° from Greenwich
Longitude West 124° from Greenwich 120°
MACKENZIE
YUKON
CASSIAR
CARIBOO
LILLOOET
COAST
ALBERTA
UNITED STATES
PACIFIC OCEAN
QUEEN CHARLOTTE ISLANDS
VANCOUVER ISLAND
Dawson
Fort Simpson
Fort Providence
GREAT SLAVE LAKE
Fort Liard
Fort Nelson
Fort Vermilion
Fort St. John
Fort George
Fort McLeod
Fort St. James
Fort Fraser
Quesnel
Barkerville
Alexandria
150 Mile House
Clinton
Lillooet
Lytton
NEW WESTMINSTER
Kamloops
Revelstoke
Golden
Nelson
Victoria
Dixon Entrance
Queen Charlotte Sound
C. St. James
C. Flattery
REINDEER OR CARIBOU MTS.
Smoky River
Jasper House
Tete Jaune Cache
Bella Coola
Telegraph Creek
Atlin

The north-western section is drained by the *Yukon* into Bering Sea. A number of comparatively short streams; viz., the *Stikine*, (250 miles), the *Nass*, and the *Skeena* (300 miles), drain the northern plateau into the Pacific Ocean. All these rivers are rapid and carry to the sea vast quantities of detritus, which is gradually building up alluvial lands at their mouths.

Soil. In general the valley lands are fertile. On Vancouver Island, along the coast, and in the interior where there is sufficient rainfall, or where irrigation is practised, the valleys, such as the Okanagan, are very productive. In general, the rivers when nearing their outlets flow through rich alluvial districts; for example, the Fraser flows through a wide alluvial plain 80 miles long. The country drained by the Peace, in the north-east has a soil well adapted to agriculture.

A glacier in British Columbia.

Climate. Very varied climatic conditions prevail in British Columbia. Upon the climate of Vancouver Island and the coast region, the Japanese current and the moisture-laden westerly winds exercise a moderating influence and provide a copious rainfall. The Coast Range creates a dry belt to the east of these mountains but moisture is carried by the higher currents of air to the loftier peaks of the Selkirks; this produces the heavy snowfall which distinguishes this range from its eastern neighbour, the Rockies. Thus a series of alternate moist and dry belts is produced. On Vancouver Island and the coast region the summers are warm, with much sunshine. Severe frosts are very rare; but east of the Coast Range the summers are warmer and the winters colder.

People. The great majority of the people are of British origin. There is a considerable number of Indians and half-breeds. Many Chinese and Japanese have likewise settled in the province. In addition to these, there is a sprinkling of many nationalities attracted especially by the frequent discoveries of gold.

INDUSTRIES AND RESOURCES

British Columbia is a mountainous land rich in minerals; its valleys are of great fertility; there are magnificent forests, and its coast and river waters teem with valuable fish.

Mining. The leading industry of British Columbia is mining. Gold, found among the sands and gravels of nearly all the streams, is washed out by a process known as *placer* mining. The miner shovels the gold-bearing sands and gravels into a sluice or trough in which a current of water is running. The lighter materials are carried away while the heavier gold drops downward and is caught on wooden slats fastened to the bottom of the sluice. Sometimes hydraulic placer-mining is used. Instead of the gravels being shovelled by hand, a very strong jet of water is directed against the bank from the nozzle of a large pipe, and the gravels are thus washed into the sluices. Placer-mining is still carried on chiefly by Chinese and Indians, but most of the gold is now mined from veins in which silver and copper are sometimes found. These gold-bearing veins occur in Yale, Cariboo, Lillooet, Cassiar, and especially in East and West Kootenay districts and the boundary country. New discoveries are being made, and the yield of copper, silver, and gold is constantly increasing. Copper now ranks first in value among the mineral products of the province; it is followed by coal, gold, lead, and silver in the order named. Coal-mining is carried on both on the Island at Nanaimo and on the mainland in the Crowsnest Pass. Magnetic iron ore in almost unlimited quantity is found on Vancouver Island.

Unloading salmon on a river bank.

Fishing. Next in importance to mining is fishing. The waters of the coast abound in fishes, the principal being salmon, halibut, herring, and cod. The canneries for salmon-packing are situated on the Fraser, Skeena, Nass, and inlets along the coast. A season's pack of salmon has been valued at $6,000,000. Hatcheries for the propagation of fry are established at various points throughout the province.

Lumbering. Another great industry is lumbering. Dense forest areas are found on Vancouver and on other islands on the coast of the mainland. In the interior, where it is drier, the trees are not so large as on the coast. Along the rivers and lakes and on most of the mountain sides there are large well-wooded tracts. The principal tree of commerce is the Douglas Fir, which on the coast grows to a height of from 200 to 300 feet, with a diameter of from 8 to 10 feet. The best trees average 150 feet clear of limbs, and five to six feet in diameter. The wood is very durable and strong. Other important trees are the red and the yellow cedar, spruce, and white pine. The cedar is mainly used for shingles, which are shipped to all parts of Canada. For convenience of export, the largest saw-mills are near the coast. The lumber is taken to China, Australia, South America, Great Britain, and other countries. The manufacture of pulp and paper from spruce is becoming an important industry.

Agriculture. In the coast districts the climate is too moist for wheat, but oats, barley, and hay grow very luxuriantly. In the interior, stock-raising is the principal agricultural industry; but mixed farming and fruit culture are growing in importance. Wherever the land is irrigated fruit is remarkably profitable. Pears, cherries, apples, plums, and all small fruits are very prolific. In the southern interior, where the temperature is favourable, peaches, grapes, and melons are grown in larger quantities.

Giant Trees, Stanley Park, Vancouver.

Transportation. The Canadian Pacific Railway connects the southern part of the province with the rest of the Dominion. A branch from near Medicine Hat, through

Lethbridge and Macleod, enters British Columbia through the Crowsnest Pass and serves the Kootenay district. Short lines connect important points in the south with one another. The Grand Trunk Pacific and the Canadian Northern railways will soon extend to the coast.

On Vancouver Island the Esquimault and Nanaimo Railway connects Victoria with the coal-mines at Nanaimo.

The navigable stretches on the Columbia River and Kootenay Lake are used by steamers. Boats ply along the coast, connecting Victoria and Vancouver with other points both north and south. The Canadian Pacific Railway Steamship line connects Japan and China with British Columbia. Another makes regular voyages to Hawaii, Fiji, New Zealand, and Australia.

Government. The government of British Columbia is like that of Ontario.

Dry-dock, Esquimault.

CITIES

Victoria, the capital, 84 miles from Vancouver, is beautifully situated on a small but safe harbour at the south-eastern extremity of Vancouver Island. It has a large ocean and coast trade. Among its fine buildings are the Parliament Buildings and the new Canadian Pacific Hotel.

Vancouver, on a landlocked harbour, roomy and deep enough for the largest vessels, is the terminus of the Canadian Pacific Railway and its Transpacific steamship line. It is the commercial metropolis, and the centre of the lumber trade of the province. Stanley Park with its beautiful situation, its magnificent outlook over sea and mountain, and its towering firs and cedars, is one of the great attractions of the western coast. Vancouver is the seat of a University College and the provincial Normal School.

New Westminster, on the Fraser River, 16 miles from its mouth and 12 miles from Vancouver, is the centre of the salmon-canning industry. It is the distributing point for a fertile agricultural region, and has a large lumber trade. An electric railway connects it with Vancouver; and a fine steel bridge over the river, with the country to the south.

Nanaimo, the "coal city," 73 miles from Victoria, on the east coast of Vancouver Island, is the centre of the coal-mining industry. Coal is shipped to California, Hawaii, and China.

Nelson, on the west arm of Kootenay Lake, is the commercial centre of the southern interior district of the province. Its chief industries are connected with mining, lumbering, and fruit-growing. It has a large smelter, flour-mill, saw-mill, and fruit-packing establishment.

Rossland, situated in the southern part of West Kootenay, 3,400 feet above sea-level, is a mining city. The surrounding hills have immense deposits of iron and copper ore carrying gold and silver.

There are a number of growing cities in the province. Among these are *Revelstoke*, a divisional point on the main line of the Canadian Pacific Railway. A branch of this railway to the south gives access to the Slocan, Kootenay, Boundary, and Crowsnest districts.

Kamloops, 250 miles east of Vancouver, is the distributing centre for a large agricultural, ranching, mining, and lumbering district.

At *Trail*, 14 miles from Rossland, are immense smelting works, a lead and silver refinery, and a lead pipe factory, the only one of the kind in Canada.

Fernie, on the Crowsnest Pass Railway, is the centre of the coal-mining industry of this part of the province. Coke is produced in great quantities and shipped south and west for smelting purposes.

NOTE. In British Columbia, when a place is incorporated it becomes a city, although the population may be only a few hundred.

XLV. THE TERRITORIES

THE YUKON

Position and Extent. The Yukon Territory extends from British Columbia on the south to the Arctic Ocean on the north, and from the North-West Territory on the east to Alaska on the west. Its area is about 207,000 square miles.

Surface. The Territory being part of the Rocky Mountain system is in general mountainous. There are, however, many stretches of rolling country, and wide flat river valleys. The lower tracts of country are covered with extensive deposits of boulder-clay, gravel, sand, and silt.

Drainage. Parts of two river systems are found in the Yukon. The Liard and its tributaries drain the southern part into the Mackenzie. The *Yukon* with its affluents, the *Lewes*, *Pelly*, *Stewart* and *Porcupine*, drains the greater part of the territory into Bering Sea.

Hydraulic mining.

Climate. In consequence of its northern position, the summer season in the Yukon is short and the winter long. The climate is subject to extremes of heat and cold. In winter the temperature falls at times to 70 degrees below zero; the sky, however, is clear, and the air dry and invigorating. In summer the days are so long, about 20 hours at Dawson and growth is so rapid, that garden vegetables are successfully cultivated.

Industries. The value of the country lies in its minerals, principally gold. It was in 1896 and 1897 that the phenomenal richness of the territory in this metal was made known. At first the mining was altogether of the placer kind, but quartz veins are now being worked. The extracting of gold from the rock crushed by machinery has now become a permanent industry. Copper, iron, and coal are also found.

The rush of people into this territory opened up an important trade for Vancouver and Victoria, and the Pacific Coast cities of the United States.

Transportation. The chief route into the territory is by the Lynn Canal, a narrow inlet running far into the land, to Skagway; thence by the White Pass and Yukon Railway, 112 miles long, to Whitehorse; and by steamer down the Lewes and Yukon rivers, 460 miles, to Dawson.

The great bulk of imports is taken into the country, in the summer season, by flat-bottomed boats running up the Yukon River from Bering Sea through Alaska.

Government. The Yukon is governed by a *Commissioner*, appointed by the Federal Government at Ottawa, assisted by a *Council*, part of which is appointed by the Crown and part elected by the people of the Territory. One member of parliament represents the Yukon at Ottawa.

Chief Places. The city of *Dawson*, the capital, is situated at the confluence of the Klondike and Yukon rivers. It was founded in 1896. Since the richest claims in its vicinity have been worked out and the miners have gone elsewhere, the city has decreased in population. It is connected with Bonanza by a railway 12 miles long, and with Whitehorse by steamer during the season of navigation.

Whitehorse, situated at the terminus of the White Pass and Yukon Railway, which runs almost due north from Skagway in Alaska, is the centre of a copper-mining district.

NORTH-WEST TERRITORIES

Position. The part of Canada which stretches across the northern portion of the continent from the Yukon Territory on the west to Hudson Bay on the east, and which lies immediately north of the provinces of Alberta, Saskatchewan, and Manitoba, is known as the North-West Territories. It has an area of about 1,246,000 square miles.

Surface. Part of this vast area lies north of the forest region and is known as the *Barren Lands*. It grows lichens and mosses upon which great herds of deer feed. These barren lands lie on each side of Hudson Bay.

South of the barren lands are the forest regions. The chief trees found in these northern parts are the white spruce, the black spruce, and the larch.

There are large alluvial plains in the basin of the Mackenzie River, and the climate is such that trees a foot in diameter grow in the delta of this river, within the Arctic Circle

Resources. This vast area is very thinly peopled. The only settlements are around the trading posts of the Hudson's Bay Company. The present resources of the country consist mainly of the furs which this company collects from the Indians and white hunters for export to England. It is probable that valuable minerals may be discovered here, as in the Yukon; and when the supply of pulp-wood in the southern parts of Canada has been exhausted, the spruce of this region will become valuable.

XLVI. NEWFOUNDLAND

Position and Extent. The Island of Newfoundland lies immediately east of the Gulf of St. Lawrence, which it protects from the full swell of the Atlantic. It is separated from Labrador by a strait 12 miles wide, and is 65 miles distant from Cape Breton Island. From north to south its greatest length is about 325 miles, and from east to west about 310 miles. Its area is about 42,000 square miles, i.e., twice the area of Nova Scotia. Its general outline is that of an equilateral triangle. The coast, especially on the east side, is very irregular, and, as a consequence, the island has a very extensive coast-line, estimated at not less than 2,000 miles, with many excellent harbours

Surface. The surface is irregular, although no part has an elevation of more than 2,000 feet. In general, the hills are near the coast, and the interior of the island is an undulating country, consisting largely of barrens, marshes and lakes; these, it is estimated, cover at least one third of the surface. The plateau along the west of the island, which is about 1,000 feet high, is known as the Long Range.

Soil. The soil is in general cold and wet and not well fitted for agriculture. However, tracts of fertile land exist in the valleys of the larger streams. Where the soil is suitable, oats, barley, potatoes, and vegetables do well.

Climate. Newfoundland is a good example of an insular climate. In winter the thermometer seldom falls below zero, and in summer it ranges from 70° to 80°. Owing to the Arctic current along the eastern coast, this part of the island is cooler than the west, and the spring is later. The meeting of the warm waters of the Gulf Stream with the cold waters of the Arctic Current causes frequent fogs, not only on the banks, but also along the south and south-east coasts. The average annual rainfall is about 58 inches.

INDUSTRIES AND RESOURCES

Fishing. The fisheries constitute the great industry of the island. About one quarter of the population is engaged in catching and curing fish. Cod are caught partly in the bays and inlets around the shores and partly on the Grand Banks, which lie east and south of the island. The Grand Banks are extensive submarine plateaus about 600 miles long by 200 miles wide, on which the water ranges from 60 to 900 feet in depth. The cod fisheries are the most important in the world. Great numbers of other fish, such as salmon, herring, and haddock, are also caught and cured. The fish are exported to Great Britain, the United States, the south of Europe, and South America

Sealing. The seal fisheries are next in importance to the cod. In the spring the seals are brought down from the north on the ice-floes on which they are rearing their young, and vessels, built especially for strength, make their way into the ice and the seals are slaughtered for their blubber and skins.

The canning of lobsters is becoming a very important industry.

Mining. Newfoundland is rich in iron ore, great quantities of which are exported, chiefly to Sydney, Nova Scotia. Copper is also produced in large quantities. Coal of excellent quality, and vast deposits of gypsum are found on the west coast near St. George Bay. Lead ore carrying small quantities of silver is abundant.

Lumbering. Spruce, pine, tamarack, and birch are plentiful on the island. The spruce is being extensively used for the production of pulp and paper, and large sawmills, particularly in the north, convert the pine and other trees into lumber.

St. John's, Newfoundland, from the water front.

Transportation. Newfoundland has a government railway about 650 miles long, running from St. John's to a number of the more important places. It has occasional branch lines. Communication is maintained with the mainland by lines of steamers. Being the nearest point to Europe, the southeastern part of the island is the landing place for many of the cables across the Atlantic.

Government. Newfoundland is the oldest British colony. It consists of the island of Newfoundland and a strip of country along the eastern side of the Labrador Peninsula. Its affairs are managed by a *Governor*, appointed by the British Government, aided by a *Legislative Council* of fifteen members, appointed by the Governor in Council, and a *House of Assembly* of thirty-six members elected by the people.

CITIES AND TOWNS

St. John's, the capital, situated on the east side of Avalon Peninsula, has a fine landlocked harbour, one mile long and one and a half wide. Vessels of largest tonnage can enter at all times. It has a dry-dock 600 feet long with a depth of twenty-five feet at low water. Its industries include fisheries, refineries for whale and seal oil, foundries, and machine-shops. Its chief buildings are the Anglican and Roman Catholic Cathedrals, Public Museum, and Government Buildings.

Harbour Grace, on the west shore of Conception Bay, is noted for its fisheries.

Heart's Content is the landing-place of a number of Atlantic cables.

XLVII. THE UNITED STATES

Size and Extent. The United States not including Alaska and the many dependencies, has an area of 3,026,789 square miles; that is, it is a little larger than the continent of Australia. Including Alaska, the Philippines, Hawaii, Porto Rico, and a few scattered islands in the Pacific Ocean, the area is 3,743,344 square miles, or nearly equal to that of Canada or Europe. The United States extends from the Atlantic to the Pacific, and from the Great Lakes and the 49th parallel to the Gulf of Mexico and Mexico. The country is so large, the physical and climatic conditions so unlike in different parts, and the occupations of the people so various, that it is necessary to divide the states into sections, and treat each section separately.

The Capitol Building at Washington.

People. The majority of the people are of European extraction, British being the chief, then German, French, Spanish, Italian, Scandinavian, Hungarian, and Swiss. The pure and mixed Negro element descended from slaves amounts to about ten per cent. of the people and is increasing. The Indians who formerly occupied the whole country number only about one half of one per cent.; they are confined mainly to reserves and are decreasing. There are also a number of Chinese and Japanese. The United States form a Federal Republic, with each state a separate Republic, enjoying a large amount of self-government.

THE NEW ENGLAND STATES

The New England States are *Maine, New Hampshire, Vermont, Massachusetts, Rhode Island*, and *Connecticut.*

These six states are about three times the size of Nova Scotia, but the population numbers more than five and a half millions, or twelve times that of Nova Scotia.

Surface. New England is almost entirely made up of hard rocks like those forming the Appalachian Mountains. It has a diversified surface, but along the coast it is generally low, especially in the three states on the south. Farther from the ocean the altitude is greater, so that a large part of New England is an upland. Into this upland the streams have cut narrow valleys, which are deeper in their upper courses, because of the increased altitude.

Soils. The whole of New England, even to the very tops of the higher mountains, was covered by the glacier which once spread over northern North America.

The soils which formerly existed on the upland were largely removed and deposited irregularly in the lowland valleys. Since the melting of the ice sheet, there has not been sufficient time for deep soils to form again on the uplands. For this reason these regions are little suited for agriculture, sparsely populated, and largely given up to forests or pastures. The soils in the river valleys are deep and generally rich, and devoted principally to agriculture.

Drainage. The rivers of New England are short, and navigable for only a few miles inland. They derive their chief importance from their use in manufacturing. The great glacier formed dams at which the rivers now have falls. It is natural, therefore, to find many important manufacturing towns located on the rivers.

Climate. New England, from its position in the north-eastern part of the United States, has cold winters and warm summers. The rainfall is more abundant than in Ontario, and is more evenly distributed throughout the year than in any other part of the United States. As a result, there is very little damage from drought in the summer months; the ground is so full of water that the wells rarely become dry, and the streams ordinarily furnish sufficient water to enable the mills to run throughout the year.

Occupations. On account of the position of New England on the seacoast, its abundant water-power, favourable climate, and diversified surface, the people are engaged in many different occupations. More than one half of them are employed in manufacturing, and about one eighth in agriculture. Fishing, lumbering, and quarrying are also important industries, in certain regions where the conditions are favourable to their development.

Agriculture. Massachusetts is one of the few states of the Union in which onions are raised in large quantities, and Connecticut is one of the most important of the northern states in the production of tobacco. Potatoes are raised in large quantities in northern Maine and in Massachusetts. Hay and oats are leading crops in the cool climate and on the steeper slopes of Vermont and Maine; and more than half the cranberries of the United States are produced in the swamps of the sandy south-eastern portion of Massachusetts.

Forest Products. The forest products of northern New England are important, but no one of these states takes first rank in lumbering. The chief timber-producing trees are the white pine and hemlock, valuable in house building; the spruce, much used in paper-making, and certain of the hardwoods, especially oak, used in the manufacture of woodenware.

Fishing. By reason of the excellent harbours close to the fishing grounds of the continental shelf, New England has always been noted for its fishing. *Gloucester*, *Boston*, and *Provincetown*, Mass., and *Portland*, Me., are the centres of the deep-sea fishing for halibut and cod. Herring, bluefish, and mackerel are caught mainly in the summer months by fishermen from the small ports along the shore.

Mining and Quarrying. The hard rocks, which make the surface of New England, contain few mineral deposits of value, but they are exceedingly important as furnishing building and ornamental stones. Granite, marble, slate, and sandstone are extensively quarried for building, paving, and other purposes.

Manufacturing. Although most of the raw products necessary for manufacturing have to be brought from a distance, yet the advantages of cheap power and good transportation facilities so far outweigh this one disadvantage that manufacturing is constantly increasing.

A rocky pasture in New England.

The most important manufactures are cotton and woollen goods, leather products, machinery for cotton and woollen-mills, fine tools, and delicate instruments. Massachusetts leads in the manufacture of boots and shoes, making nearly half the boots and shoes of the United States. It leads all the other states of the Union in the manufacture of cotton goods and also of woollens.

Trade and Cities. Owing to the large and commodious harbours possessed by all the states of New England except Vermont, foreign and coastwise commerce is easily carried on, and is very important. The chief commercial city is *Boston*, Mass., which ranks next to New York, the most important port in the United States. *Portland*, Me., possessing a fine harbour and excellent railway connections with the chief cities of Canada, is also a large and growing port.

Boston, the principal wool market of the country, exports food products to Europe, and has an extensive coastwise commerce with New York, Savannah, and the West Indies. It is the financial centre of New England, and the first city of the Union in the exportation of leather and leather goods. It is famous for its parks, public buildings, and educational and charitable institutions.

The second city in size in New England is *Providence*, R. I. It is a large manufacturing city, with an extensive coastwise trade on account of its position on the Providence River. *Worcester*, Mass., the third city in size in New England, is situated in the centre of a large manufacturing area, and has excellent railway connection with Boston, Providence, and the West. *Cambridge*, Mass., is the seat of Harvard University, and *New Haven*, Conn., of Yale University — two of the oldest and best known universities in the United States.

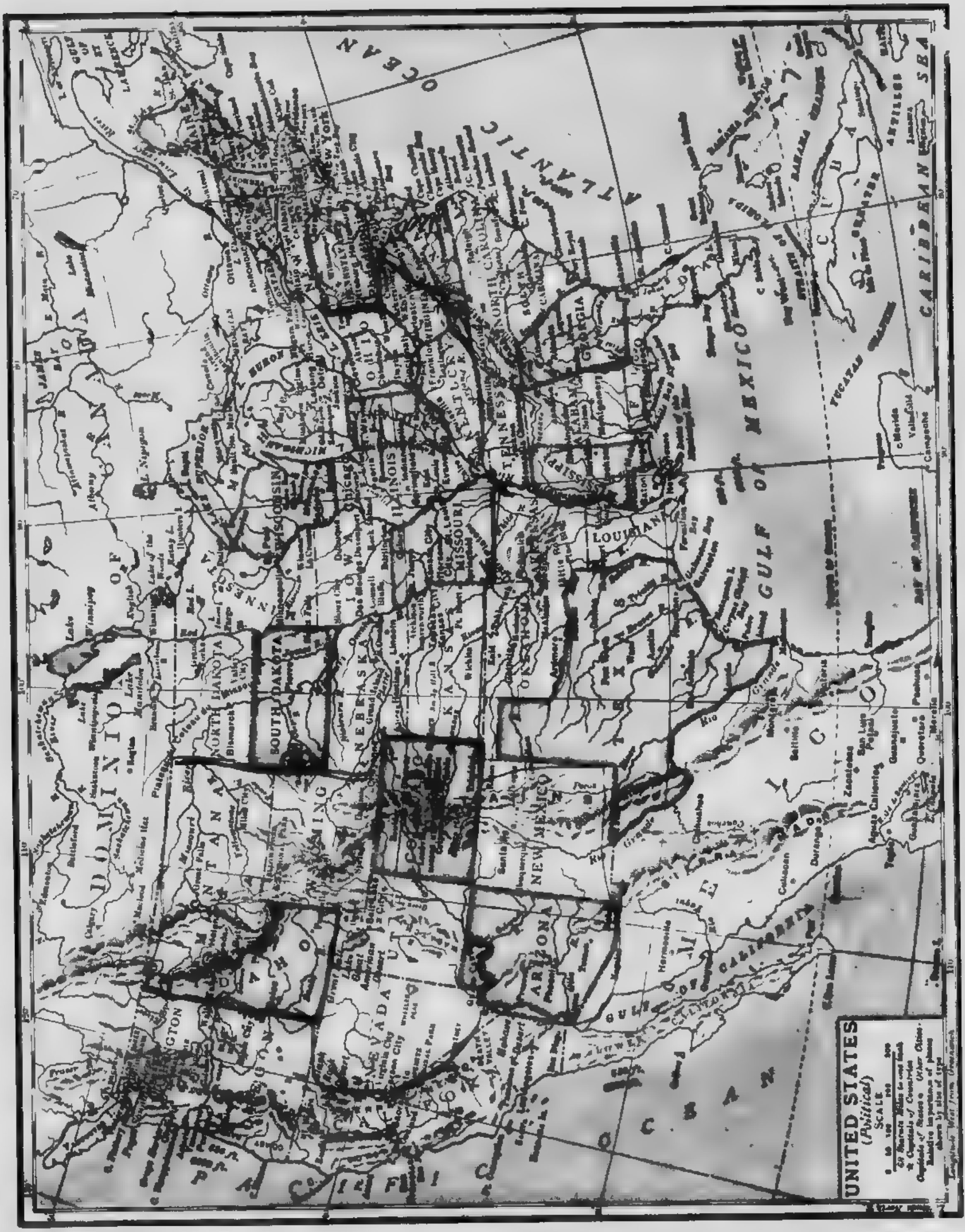
XLVIII. MIDDLE STATES OF THE ATLANTIC COAST

The Middle States of the Atlantic Coast are *New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, District of Columbia.*

Surface and Soil. Nearly the whole of New York, and the northern portions of Pennsylvania and New Jersey, were covered by the continental glacier. Hence, the streams abound in falls and lakes, and the upland soils are thin. In the valleys the glacial soils are deep and generally fertile. In the region which was not glaciated, soils formed from the underlying rock are found, as throughout the southern States.

Climate. Owing to the position of the Middle States of the Atlantic Coast on the eastern side of the continent, the climate

A fisherman's house on the coast of Massachusetts.


UNITED STATES
(Political)
SCALE
ATLANTIC OCEAN
PACIFIC OCEAN
GULF OF MEXICO
CARIBBEAN SEA
DOMINION OF CANADA
MEXICO
CUBA
WASHINGTON
IDAHO
MONTANA
WYOMING
NEVADA
UTAH
ARIZONA
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
MINNESOTA
IOWA
MISSOURI
WISCONSIN
MICHIGAN
ILLINOIS
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
LOUISIANA
NORTH CAROLINA
SOUTH CAROLINA
NEW YORK
GULF OF CALIFORNIA

is very changeable, but is everywhere moist. There is a wide range of temperature between the summer and the winter, and in winter the changes are rapid and often severe. The summer climate is generally warm and moist. In the higher mountains like the Adirondacks, the mountains of Pennsylvania, and of western Virginia and Maryland, cooler temperatures prevail at night. These regions have, therefore, become favourite summer resorts.

Rolling glacial hills of central New York, devoted principally to farming.

Agriculture. The fine, rich soils, the early spring and late autumn, the abundant water supply brought down by the rivers, all favour the development of agriculture in the coastal plain. The numerous railways connecting the interior with the great cities along the coast afford quick transportation. Therefore, throughout this region, early spring vegetables and potatoes, tomatoes and beans, such fruits as grapes, peaches, strawberries, and cantaloupes, are grown in large quantities; these are shipped either by rail or by water to New York and the other northern markets. Peanuts are raised in large portions of the coastal plain of Virginia. In the Allegheny Plateau, which is everywhere more than 1,000 feet in height, potatoes, beans, and sugar-beets are extensively grown. In the lowland, bordering Lake Erie and Lake Ontario, and bounded on the south by the plateau, grapes and other fruits flourish. Spring and autumn are both late; hence grapes do not start too early in the spring, and ripen before frost.

Peanut raising in Virginia.

Dairying. In the Adirondack region and farther south in large portions of the Alleghany Plateau, the country is better suited for grazing than for agriculture; hence, dairying is an important industry.

Fishing. The rivers and estuaries of the coastal plain area are important, not only as commercial routes, but also as fishing-grounds, particularly for oysters. Oysters require clear, warm, shallow water into which a steady supply of fresh water is running all the time. All these conditions are furnished in Chesapeake Bay, which receives the drainage of many large river basins. Hence this bay is the great centre for oyster fishing; and *Baltimore*, Md., is the chief city in the United States for the canning and shipping of oysters.

Mineral Products. The wealth of the Alleghany Plateau lies in the rocks, which contain coal, gas, and oil. In Pennsylvania the even surface of the Great Valley is broken by a number of ridges. These ridges are rich in anthracite, or hard coal, and in iron. Pennsylvania produces all the hard coal of the United States. In this section, coal, iron, and limestone, which is used to purify iron, exist close together; hence, iron and steel manufacturing have become great industries. Western Pennsylvania also produces a large quantity of bituminous coal.

This, added to the vast amounts of anthracite mined in the ridges of the Great Valley, makes Pennsylvania the chief coal-producing state in the Union. It also leads in the production of natural gas and coke, which is manufactured from bituminous coal by heating it in an oven or retort to drive off the volatile gases. The coke is used in the smelting of iron brought from Michigan and Minnesota; and as a result western Pennsylvania is the greatest iron and steel producing region of the United States. The iron ore is brought from the Lake Superior region, as it has been found much cheaper to transport the ore down the lakes to the coal than to carry the coal to the ore. The Lake Superior ore is cheaper, owing to its being more easily mined, richer in iron, and more readily reduced than the Pennsylvania ore. The most important city for the manufacture of steel is *Pittsburg*. This is also the chief glass-making city of the United States. The success of this industry is due to the supply of natural gas, which affords the best heat for glass-blowing, and to the immense quantity of pure sand found in the vicinity.

The falls at Paterson, New Jersey, which furnish power for extensive silk-mills.

Manufacturing. The Adirondack Mountains furnish water for rivers flowing to the St. Lawrence, the Hudson, and Lake Champlain. The forests supply wood for pulp. Therefore, on the head-waters of the Hudson and on the western slopes of the highland, paper-making flourishes. New York state leads the Union in this industry.

Trade and Cities. *New York* is the most important city in America because of its foreign trade; it is also the second largest city in the world. It is situated on a magnificent harbour at the mouth of the Hudson River, and is connected by railways and by water with the manufacturing cities of New England. From it railways radiate along all the natural highways toward the western and southern states; and the Hudson River and the Erie Canal furnish a water route to the Great Lakes. Through it pass enormous quantities of goods, including breadstuffs, animal products, and petroleum from the West, and cotton from the South, in transit to foreign countries. Its imports are equally large, and include raw and finished products from all parts of the world.

It is a great financial, manufacturing, and publishing centre. It is the seat of Columbia University, and of many educational and charitable institutions; and is noted for its museums, parks, and business buildings.

Philadelphia is situated at the head of ocean navigation on the Delaware River. This position, and its connection with the iron and coal-producing regions, make it a great shipping point, a great railway centre, and an important manufacturing city — especially for carpets, leather goods, locomotives and cars.

Baltimore, situated near the head of Chesapeake Bay, is important on account of its manufactures, especially its ready-made clothing, canned fruits, vegetables, and oysters, and its tobacco products. It is the seat of Johns Hopkins University.

Buffalo, situated at the eastern extremity of Lake Erie, owes its importance to its proximity to the coal-fields of Pennsylvania and to its favourable position on the Great Lakes. It is connected with New York City by many railway lines, and by the water route through the Erie

The Erie Canal at Syracuse.

Canal and the Hudson River. It is also the most eastern port of the United States which has continuous water connection with the upper lake ports. Through it passes an enormous quantity of lumber, grain, iron ore, and live stock in transit from the west to the eastern seaports and Europe.

Washington, which lies in the District of Columbia, is beautifully laid out. As the capital of the United States, it contains the great Capitol Building, the White House — the residence of the President — and many large and beautiful public buildings.

XLIX. SOUTHERN STATES OF THE ATLANTIC COAST

The Southern States of the Atlantic Coast are *North Carolina, South Carolina, Georgia*, and *Florida*.

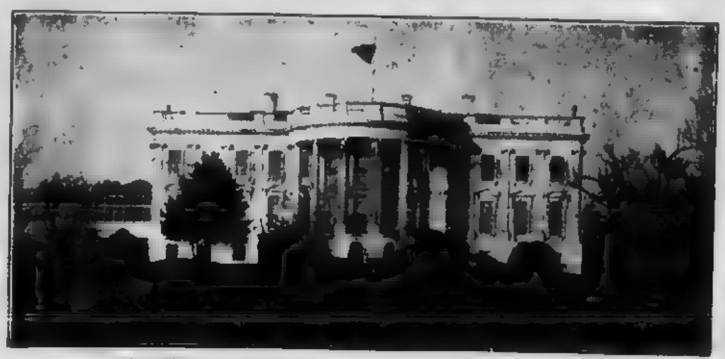
Surface. These states consist of a coastal plain (including all of Florida, more than half of Georgia and South Carolina, and nearly half of North Carolina), an upland rolling country, and the southern part of the Appalachian Mountains. The coastal plain is generally flat, with only a few sand-hills rising above the general lowland in South Carolina and Georgia. These sand-hill regions are usually covered with forests, particularly of hard pine, from which turpentine and tar are obtained in large quantities. The Appalachian Mountains reach their greatest height and beauty in North Carolina, where they are densely covered with forests.

Climate and Agriculture. The success of agriculture in this region, particularly the production of cotton and rice, depends upon the climate as much as upon the character of the soil. Owing to the influence of the ocean, spring is well advanced early in March, and the growing season is long. The cotton crop requires an early spring, a late fall, and plenty of rain and heat in the summer; here all these conditions exist.

Bordering the coast and on the offshore islands of South Carolina, Florida, and Georgia are extensive areas devoted to the production of "sea-island" cotton. The fibre of this cotton is long and of great strength, so that it is particularly valuable for certain kinds of spinning.

In the marshy lowlands of South Carolina, Georgia, Florida, and North Carolina, rice is an important crop. The seed is planted in the early spring when the marshes are flooded; and the fields must be kept covered with water during a large part of the growing season.

Sugar-cane is extensively grown in the coastal plain sections of Florida and Georgia. The climate of Florida is warm and moist, and sub-tropical in character. Such a climate is particularly favourable for the raising of oranges, lemons, grape-fruit, and pineapples. Cotton is grown in the southern portion of



The White House, the residence of the President.

the upland area; but in the northern, tobacco is the chief crop. North Carolina is the second state in the production of tobacco; and Georgia, in cotton.

Mineral Products. The rocks of the coastal plain area of Florida and South Carolina contain a great wealth of phosphate, which is valuable as a fertilizer.

Picking cotton in Georgia.

The north-western portion of Georgia contains immense quantities of iron, which is mined to a certain extent, and manufactured at Rome and Atlanta, Ga.

Manufacturing. Many fine streams from the Appalachian Mountains furnish abundance of water power for manufacturing purposes in the upland area of North and South Carolina and Georgia. At the present time South Carolina ranks next to Massachusetts, the leading state in the manufacturing of cotton.

A field of pineapples in Florida.

Cities and Trade. The trade of the southern states of the Atlantic Coast is largely with the North and with the southern states of the Mississippi Basin, either by water or rail. On account of poor harbours foreign commerce is small. *Savannah*, Ga., and *Pensacola*, Fla., are the principal ports. Pensacola trades extensively with other Gulf ports and with Cuba. Savannah has a large coasting trade with New York, Philadelphia, and Boston, and is an important cotton port. Most of the lumber from this group of states is shipped from Pensacola.

L. SOUTHERN STATES OF THE MISSISSIPPI BASIN

The Southern States of the Mississippi Basin are *Tennessee, Alabama, Mississippi, Louisiana, Texas, Arkansas,* **and** *Oklahoma.*

With the exception of the Cumberland Plateau (which occupies portions of Tennessee and Alabama) and the low mountains of Arkansas and Oklahoma, the whole region occupied by these states is a great plain.

Products of the Soil. Owing to the level surface, the rich soils, and the favourable climate, all the coastal plain east of central Texas is a magnificent farming area, where great crops of cotton, sugar, and rice are produced annually. Sugar-cane is grown largely in the river bottoms of the alluvial plain of the Mississippi, and in the lowlands of Texas. In the production of rice, Texas leads the other states, and Louisiana is second. Cotton is grown in all the states; cotton seed yields cotton seed oil, an important by-product of cotton. Berries and early vegetables for the northern markets are produced throughout these states.

Mineral Products. The only important mineral products in the coastal plain area are petroleum in eastern Texas and Louisiana, and salt in Louisiana. Texas now ranks second among petroleum-producing states.

The Cumberland Plateau. The surface of the Cumberland Plateau is a succession of hills and valleys, and is covered by dense forests of hardwoods. Hence lumbering is an important industry here. A vast wealth of coal underlies this region, and mining is being successfully carried on at a number of places.

Grazing. Western Texas and Oklahoma are primarily grazing regions. *Houston*, Texas, is, however, the centre of a great cotton-producing region, with luxuriant vegetation everywhere. Between Houston and San Antonio cotton fields gradually disappear and a little west of San Antonio the arid country begins. Here only those plants are seen which will grow with a scanty supply of moisture. The whole of this great western region is so dry that grazing is practically the only occupation of the people; and cattle, horses, and mules are raised in larger numbers in Texas than in any other state.

Along the water front at New Orleans.

Cities and Trade. The most important city of the Southern States is *New Orleans*, situated about a hundred miles up the Mississippi River, and easily reached by ocean-going vessels. It is a centre for railway connections with the North and with the East, and is the chief cotton-exporting city in the world. Its commerce is largely with England, France, and other European countries. The ground on which the city is built is below the high-water level of the Mississippi River, which is confined to its channel by strong, high embankments called *levees*.

Galveston, Texas, on Galveston Bay, has the best harbour in the state, and is the leading centre. Owing to its position, it sends a large quantity of cotton abroad, especially to Germany and France.

LI. NORTHERN STATES OF THE MISSISSIPPI BASIN

The Northern States of the Mississippi Basin are *West Virginia, Ohio, Kentucky, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, South Dakota*, and *North Dakota*.

Surface and Soils. The surface and climate of the northern states of the Mississippi Basin are generally favourable for agriculture. The fine glacial soils of the eastern and northern portions are exceptionally fertile, and grow excellent crops. The highland areas are covered with forests, and some of them contain mineral wealth of great value.

Climate and Vegetation. Throughout the northern states of the Mississippi Basin the climate is warm in summer, and the rainfall abundant, except in the extreme western portion. Hence vegetation flourishes, and large crops of wheat, corn, oats, and barley are raised. In the western portion, where the rainfall is scanty, agriculture is carried on chiefly by means of irrigation; cattle raising is the usual occupation.

Wheat is the most valuable cereal, and in its production Minnesota, Kansas, and North Dakota lead the Union. Corn, which requires more warmth than wheat, and is, therefore, grown more extensively in the southern portion of this region than in the northern, is the chief cereal. Nebraska, Iowa, Kansas, Missouri, Illinois, Indiana, and Ohio are the great corn producing states.

In the production of beets for sugar, Michigan is the third state in the Union, and the first in the raising of peas and beans. It also furnishes more than sixty per cent. of the oil of peppermint produced in the world. In northern Ohio along Lake Erie, as in New York along Lake Ontario, the climatic conditions favour the growing of grapes and small fruits. As a result, the State of Ohio is third in the Union in the production of grapes and apples, California being first, and New York second.

Animals and Animal Products. Because of the abundance of cereals raised, these states are of great importance for their cattle, horses, hogs, and sheep. Iowa produces great quantities of butter, and Wisconsin, of cheese; owing to their large crops of corn, Iowa, Illinois, Missouri, and Nebraska raise an immense number of hogs.

A paper-mill in Minnesota, beside a river filled with logs.

Forest Products. The United States furnishes more timber and lumber products than any other country. The most important states in the lumbering industry are Wisconsin, Michigan, and Minnesota. The hardwood is largely made into furniture at *Chicago* and at *Grand Rapids*, Mich. In Wisconsin and Ohio the making of paper from wood pulp is an important industry.

Mineral Products. The northern states of the Mississippi Basin are extremely rich in mineral products, especially in coal, natural gas, petroleum, iron, copper, lead, zinc, gold, salt, and building stones. Minnesota and Michigan are the leading iron-producing states. In the production of copper the Lake Superior district of Michigan ranks next to Montana. The copper is found mainly at a great depth, some of the mines being a mile deep. Bituminous coal is generally distributed throughout this group of states, Illinois, West Virginia, and Ohio being the chief centres.

Trade and Cities. *Chicago*, Ill., on Lake Michigan, is the second city in size in the Union. It is the nearest large city to the corn-growing area, and is within reach of the lumber, coal and iron regions. It is the greatest railway centre in the world. It is also the first city in the United States in the slaughtering of cattle and hogs, and in the production of agricultural implements. Clothing, and steel and iron goods are manufactured on a large scale. Its universities, schools, libraries, churches, museums, art galleries and parks make it an interesting city.

St. Louis, Mo., on the Mississippi, close to the mouth of the Missouri, has excellent facilities for water trade. It is important for its production of flour, meat products, iron and steel, finished tobacco, and malt liquors.

Milwaukee, Wis., has immense breweries for the manufacture of beer and other malt liquors.

Minneapolis and *St. Paul*, Minn., on the Mississippi, are called the "Twin Cities." Because of their position at the head of navigation and their nearness to the wheat fields and the lumber forests, they have grown rapidly. Minneapolis is the greatest flour-milling city in the world.

Duluth, Minn., on Lake Superior, has enormous grain elevators and flour-mills. Iron ore and lumber are shipped from this port in immense quantities.

Detroit, Mich., on the river connecting Lake Huron and Lake Erie, is an enterprising railway centre and lake port. It is important for its manufacture of cars and for its shipping of grain, pork, and ores.

Cleveland, Ohio, on Lake Erie, is the leading shipping point in the state, and is engaged in iron and steel manufacturing, oil refining, and ship-building.

Cincinnati, the largest city of the Ohio Valley, is an active manufacturing centre, for machinery, pottery, and clothing.

Indianapolis, Ind., is a thriving manufacturing centre in the corn belt.

Kansas City, Mo., on the Missouri River, being the centre of a rich agricultural region abounding in coal, lead, and iron, does a large business in live stock and grain, and manufactures agricultural implements and railway iron.

Louisville, Ky., beautifully situated on the Ohio River, is commercially one of the chief gateways of the south-west. It is the largest leaf-tobacco market in the world, and has extensive manufactures of iron, furniture, and agricultural implements.

LII. THE PLATEAU STATES

The Plateau States are ***Montana, Wyoming, Colorado, New Mexico, Arizona, Nevada, Utah,*** **and** ***Idaho***

Surface and Climate. These states consist almost entirely of plateaus and mountains, except in the Great Basin of Utah and Nevada, where the slopes are usually gentle. Most of the surface is a mile above sea-level. Except in the highest mountains, the climate of this vast district is very dry. The grandeur of the scenery in the Yellowstone Park and the Colorado Canyon, and the clear, dry air, and medicinal hot springs of these mountain regions have made these states famous as pleasure and health resorts.

The Colorado Canyon from below. Note the great peaks which have resisted the action of the air and the water.

Agriculture. Agriculture succeeds only where irrigation is practised, under irrigation the fertile soil yields rich returns.

Grazing. Large numbers of sheep and cattle are raised. Montana and Wyoming lead in the production of wool.

Mining. The mountains are rich in valuable minerals. Practically all the silver of the United States comes from the Plateau States. Colorado ranks first in the production of gold and silver, and Montana and Arizona in copper. Coal, though widely distributed, is little mined except in Colorado, where it is largely used in making coke.

Denver, Colo., is the great railway centre of these states.

Salt Lake City, Utah, within a rich irrigated district, is the home of the Mormon Church.

Leadville, Colo., *Butte*, Mont., and *Tucson*, Ariz., are important mining centres.

LIII. THE STATES OF THE PACIFIC COAST

The States of the Pacific Coast are ***Washington, Oregon,*** **and** ***California.***

The States of the Pacific Coast are everywhere mountainous, except in the large river valleys and on the small lowlands that border the Pacific in the southern part of California. The mountains are rising so rapidly that in portions of this region earthquakes are frequent.

Mining, lumbering, and agriculture are the leading occupations of the people.

Mining. Mining is at present practically confined to California, which produces large quantities of gold and quicksilver. In the production of quicksilver California leads the world, and in petroleum is the first state in the Union.

Copper mines near Butte, Montana.

Lumbering. The Big Trees, the largest in the world, are found only in a few scattered groves in the Sierra Nevada. Some are nearly one hundred feet in circumference, and over three hundred feet high. In some places they are being preserved, but in others ruthlessly destroyed for their lumber. The beauty of the California redwood fits it for interior decoration. In the two northern states, giant cedars and great fir trees, many of which grow to a height of over two hundred feet, furnish valuable timber.

An orange grove in Southern California.

Agriculture. Certain forms of agriculture are important in Washington, Oregon, and California. The dry valleys of these states and the eastern plateaus of Washington favour wheat, barley, and sugar-beets. Four fifths of the hops grown in the United States are produced here. The most important crop, however, is fruit. Owing to the subtropical climate of southern California and to the abundant sunshine and even temperature, all varieties of temperate and sub-tropical fruits, such as oranges, grapes, peaches, plums, and prunes, are produced in large quantities. The success of the fruit culture depends upon the employment of irrigation, for which the near-by mountain streams furnish an abundance of water.

Fishing. Since the rivers of the northwestern coast provide favourite spawning grounds for salmon, the catching and the curing of this fish are important industries in Washington and Oregon.

Cities and Trade. Owing to the regular form of the coast, harbours are few and far apart. The principal are those of the two great inlets, San Francisco Bay and Puget Sound, and the harbour of San Pedro.

San Francisco, Cal., has one of the most favourable situations on the Pacific Coast. Its commerce has grown rapidly since the United States came into possession of Hawaii and the Philippines. Across the Bay of San Francisco is *Berkeley*, the seat of the University of California.

Los Angeles, Cal., is the centre of the fruit growing area.

Portland, on the Columbia River, is the chief port of Oregon.

Tacoma and *Seattle*, on Puget Sound, are the leading lumber centres of the west.

LIV. THE DEPENDENCIES OF THE UNITED STATES

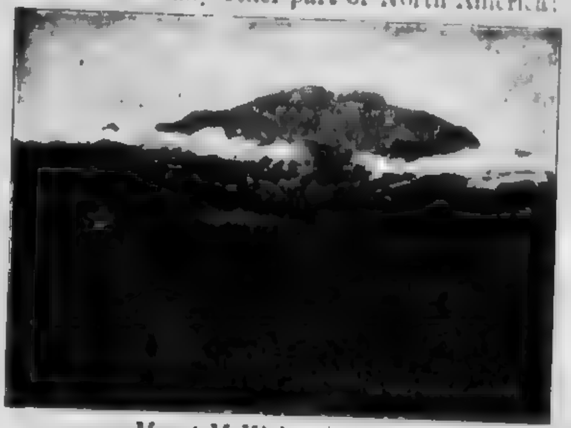
The United States possesses several dependencies in different parts of the world, and a few small islands in the Pacific. The territories of *Alaska*, *Hawaii*, and *Porto Rico*, and the *Philippine Islands*, are of great value because of their products, but the small islands are of little value except as cable and coaling stations in the Pacific Ocean.

ALASKA

Alaska, which was bought from Russia in 1867, is mostly mountainous. The Rocky Mountain Highland grows narrower here, but contains high peaks, such as *Mount McKinley*, and *Mount St. Elias*. Among the rivers is the Yukon, one of the large rivers of the continent, and an important highway for summer

A view of the harbour, San Francisco.

trade. The prevalence of westerly winds accounts for the moist and somewhat equable climate along its coast, and for a rainfall greater than that in any other part of North America; hence forests grow on the slopes of the mountains up to a height of 2,500 or 3,000 feet.


Mount McKinley, in Alaska.

In the interior, in winter the temperature is low, the rainfall slight, and the ground may be frozen to a depth of over one hundred feet. In summer the temperature is relatively high, the surface soil melts, and the ground is covered with vegetation.

Products. Mineral wealth is the greatest natural resource of the country. Gold has been found in great quantities in the beach and river gravels. Coal is also widely distributed, but its inaccessibility confines mining to the coast.

Loading sugar-cane in a Hawaiian plantation.

The second industry in importance is that of salmon canning. The third product is sealskins. The fur-bearing seals are found in large numbers on the Pribilof Islands.

HAWAII

About one third of the way across the Pacific Ocean, and within the Hot Belt, is a group of mountainous and extremely volcanic islands known as the *Hawaiian Islands.* Hawaii is the fourth largest producer of cane-sugar in the world. Rice and bananas are also raised in large quantities.

Honolulu, the capital, on the island of Oahu, is a modern city with electric cars and electric light.

THE PHILIPPINES

The Philippines, which have been possessions of the United States since 1898, are the most numerous group of islands south-east of Asia. The largest island is Luzon. The population is now more than seven millions, of which the larger part belongs to the Yellow Race. The surface of the Philippines is generally mountainous and volcanic, and the climate is tropical.

Loading Manila hemp rope to carry to the ships.

The chief products are hemp, sugar, coffee, cocoa-nuts, tobacco, and indigo. Rice is raised extensively, but only for home consumption. The forests are rich in cabinet and dye-woods.

The islands are rich in minerals, including gold, coal, copper, silver, and lead.

PORTO RICO

Porto Rico, one of the larger islands of the West Indies, contains a population of nearly a million. Owing to the warmth and moisture, the slopes of the island are covered with forests, which contain valuable supplies of cabinet woods, as do the forests of the other Caribbean regions. Sugar, tobacco, coffee, and tropical fruits are the leading agricultural products.

LV. MEXICO

Size and Population. Mexico, the largest of the countries of southern North America, has about one fifth the area and about double the population of Canada. The Aztecs, the dominant Indian race, had attained a considerable degree of civilization before the conquest of Mexico by Cortez in 1521. The country remained a Spanish colony until 1824. It is now a republic similar to the United States. All races enjoy the same political privileges.

Surface. Mexico is largely occupied by the southern extension of the Rocky Mountain Highland, which includes a broad arid plateau in the north. High mountains surround the central plateaus, and rise from 6,000 to 8,000 feet above them. Many of the highest of these are nearly extinct volcanoes, which tower above the snow-line in peaks of great beauty.

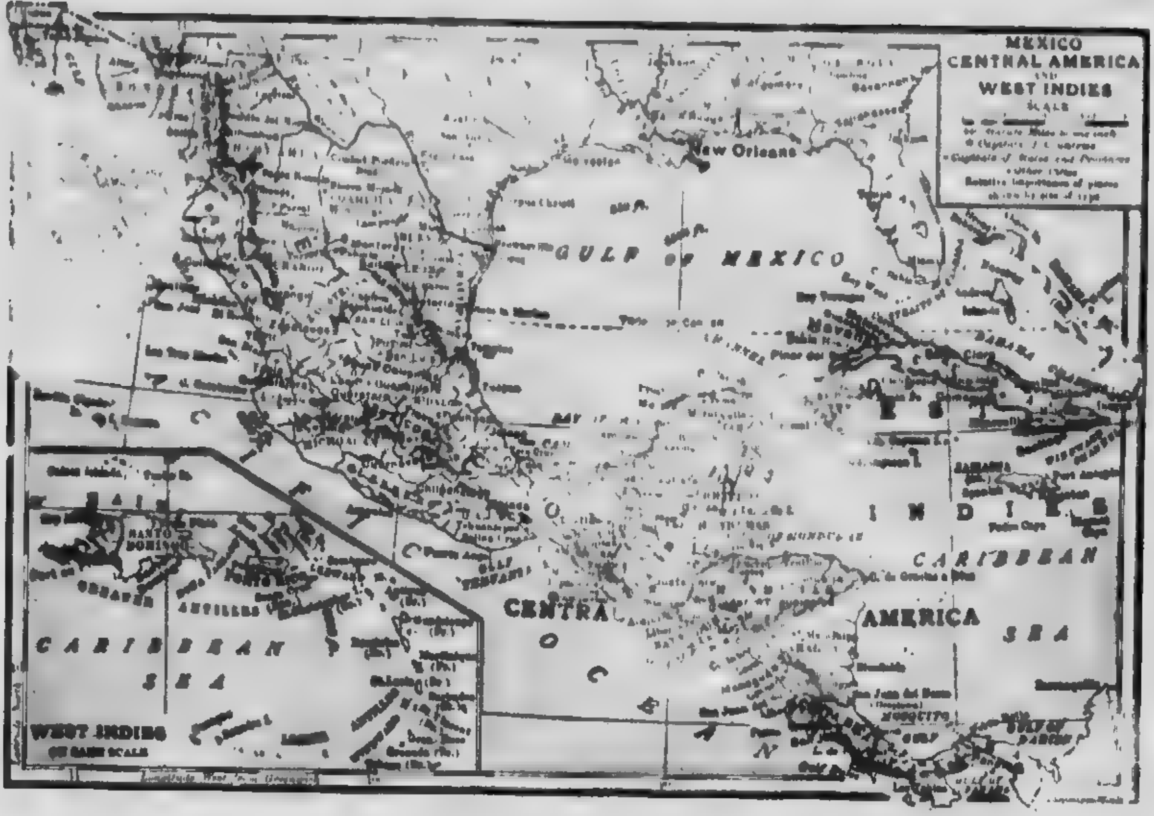
A town in the lowland of Yucatan, Mexico.

The only considerable lowland is the narrow eastern plain bordering the Gulf of Mexico, and including Yucatan. This plain is nowhere more than a thousand feet in altitude.

Drainage. The only important river of Mexico is the *Rio Grande*, which separates it from the United States. During the dry season there is usually little water in its lower courses.

Climate and Rainfall. Mexico lies entirely in the Hot Belt, and is in the line of the trade-winds. The climate, however, is extremely varied, owing to the influence of the highlands, which run nearly at right angles to the general direction of the winds. The hottest portion, known as the Hot Lands, extends from sea-level up to about 3,000 feet, and is occupied by tropical vegetation. Between 3,000 and 7,000 feet, the climate and vegetation are temperate, and this region is therefore known as the Temperate Lands. From 7,000 to 10,000 or 11,000 feet the climate is cool; the higher peaks are clothed in perpetual snow. In the height of the rainy season, which begins in May and lasts un October, heavy rains fall almost daily in the lower altitudes, and the vegetation becomes luxuriant. In the dry season there is practically no rainfall, and vegetation dries up or ceases growing.

Products of the Soil. Owing to the warm moist climate and the great abundance of sunshine in the Hot and Temperate Lands,



the products of Mexico are mostly agricultural. In the Hot Lands cotton, coffee, cacao, vanilla, and tropical fruits are raised in abundance; and on the plains of Yucatan the valuable fibre *hennequin*, used for making rope and sacking, is the chief crop. Mahogany, logwood, and other valuable tropical woods are found in the forests covering the lower slopes. In parts of this area the vegetation is so dense that travel is well-nigh impossible.

In the Temperate Lands, maize or Indian corn, beans, tobacco, and wheat are the principal crops. Cochineal insects are fed on a certain form of cactus and are valuable as a red dye. In the plateau area are found the agaves, which furnish valuable fibres; and their juices, when fermented, form the national alcoholic drinks.

Corn, wheat, and other cereals common in the Temperate Belt abound in the cool zone and in the interior plateau. The [illegible] cereal is maize, and in its production Mexico is outranked only by the United States, Austria-Hungary, and Argentine Republic. In the temperate and cool regions, evergreen trees cover the mountain slopes to a height of 13,000 feet, and dense forests are found as high as 11,000 feet. In the drier northern regions of the plateau, agriculture is possible only by means of irrigation. Hence, grazing is the chief industry. Sheep are raised in large numbers for their wool, which is of a very fine quality.

Mineral Products. The mineral wealth of the mountain areas of Mexico is enormous. It produces about one third of the silver of the world, and has vast areas as yet untouched. It is the second nation in the production of copper, and is rich in iron, coal, quicksilver, and other mineral products. Sulphur is found in the volcanic areas; and jasper, Mexican onyx, and other gems and precious stones are exported in considerable quantities.

Trade and Cities. Nearly seventy per cent. of the exports of Mexico are precious metals, agricultural products being, in the main, used at home. Cabinet woods, hennequin, vanilla, coffee, tobacco, cattle, and fruits are exported. The imports are manufactured articles, such as iron and steel goods, cotton textiles, furniture, and other wood products. The greater part of the trade is with the United States, and is centred on the eastern coast, because the harbours there have good connection with the interior by means of railways.

The most important city is *Mexico*, the capital of the country. It is situated at an elevation of more than 7,000 feet, and is one of the oldest and most interesting cities of America. It abounds in beautiful buildings erected by the early Spaniards. Among these is the Cathedral of Mexico, one of the most noted buildings of the Western Hemisphere. The city of Mexico is connected with the United States by two trunk-lines of railway. A railway across the isthmus of Tehuantepec, opened in 1907, affords connection between the Gulf of Mexico and the Pacific Ocean.

A coffee plantation in Guatemala.

The most important commercial towns are *Tampico* and *Vera Cruz*. Vera Cruz is the chief port, owing to the fact that its harbour has been deepened, so that ocean-going vessels can reach its wharves.

LVI. CENTRAL AMERICA

Countries; People. Central America consists of the following small countries: *Guatemala, British Honduras, Honduras, San Salvador, Nicaragua, Costa Rica*, and *Panama*. All these countries are independent republics except *British Honduras*, which is a Crown Colony of the United Kingdom.

The people are similar to those of Mexico, but with a greater variety of Europeans, for there are many British, German, and French settlers in addition to Spanish. At one time the whole country was under Spain.

Panama. It is now the most important country in Central America because of its position. The Isthmus of Panama has long been a barrier to trade, because all goods in transit between Atlantic and Pacific ports had to be transferred by rail between *Panama* and *Colon*, two ports on opposite sides of the Isthmus, or be carried around by the Cape Horn route. A ship-canal, across the isthmus begun many years ago by the French, is under construction by the United States. Panama will then be situated on one of the world's great highways of trade, as Port Said and Suez have been since the completion of the Suez Canal.

Surface and Climate. The whole of Central America, with the exception of a low, narrow plain on the eastern coast, is extremely mountainous. Earthquakes are of frequent occurrence. The climate of Central America depends chiefly upon the influence of the trade-winds. The eastern coast has a heavy rainfall, and is occupied by dense forests, inhabited only by Indians. The Pacific slope has a dry period from November to May.

Because of its elevation, Central America, like Mexico, may be divided into the Hot Lands, the Temperate Lands, and the Cool Lands. The best climate is found in the mountains at an elevation of over 6,000 feet.

Products. Owing to the warm, moist climate, and deep, rich soil, vegetation thrives everywhere in Central America, and agricultural products are the principal wealth of the country. On the Hot Lands below 3,000 feet, characteristic tropical plants like cacao, india-rubber trees, and the cocoa-nut palm abound. The Temperate Lands, lying between 3,000 and 6,000 feet, are largely devoted to coffee, especially in Salvador, Guatemala, and Costa Rica. In the Cool Lands potatoes, grain, maize, and beans are raised, as in the similar area of Mexico.

Trade and Cities. The city of *Guatemala*, by far the largest city of Central America, is the centre of the coffee trade; *Puerto Barrios*, the only port of any importance, exports most of the crop. Guatemala does most of its trading with the United States and Germany. The chief port on the Caribbean Sea is *Bluefields*, but it is not easily accessible from the interior. Hence, Bluefields is not so important in trade as *Corinto* on the west coast, which has a well-protected harbour and good railway connections. The trade of British Honduras is mostly with the United Kingdom. The principal export is timber, brought down from the interior by the rivers. Bananas and cocoa-nuts are sent to the United States.

Mont Pelée, Martinique, in eruption.

LVII. THE WEST INDIES

Ownership. The Indies include the great series of islands lying chiefly in the Gulf of Mexico and the Caribbean Sea. The larger to the west are known as the *Greater Antilles*; and the smaller, to the east, as the *Lesser Antilles*. *Cuba*, *Haiti*, and *Santo Domingo* are independent countries. The *Bahamas*, *Jamaica*, *Trinidad*, and a number of small islands, such as *Barbados*, *Tobago*, and *St. Vincent*, are British possessions. *Porto Rico* belongs to the United States. The remaining islands are possessions of France, the Netherlands, and Denmark.

Size and Surface. The islands of the West Indies vary in size — from Cuba, about twice the area of Nova Scotia, to tiny coral islands rising only a few feet above the sea. With the exception of the Bahamas, which include about 3,000 low coral reefs, nearly all the islands are mountainous. Many of them are volcanic, but until the eruption of Mont Pelée in 1902 it was supposed that the volcanoes were dormant.

Climate; Soil. The climate of the West Indies is tropical and hence the range of temperature is small, and changes of weather from day to day, few. The rainy season comes toward the end of the summer, and there is a heavy daily rainfall. Owing to the prevailing moist climate and to the deep, rich soil, all the West Indies except the Bahamas, St. Thomas, and Antigua, are extremely fertile, and vegetation grows in tropical luxuriance.

People. The progressive people of the West Indies are mostly of Spanish descent, and except in the English colonies, Spanish is generally spoken throughout the islands. The negroes outnumber the whites except in Cuba and in Santo Domingo, and furnish most of the labour for the plantations.

CUBA

Surface and Coast-Line. The island of Cuba includes about half the area of the West Indies. This Spanish possession became, in 1902, an independent republic. It is chiefly occupied by rugged mountains, particularly in the east and west, and a low-lying plain in the interior. The mountains, generally not more than 3,000 feet in height, are broken by many drowned valleys, forming landlocked harbours.

Productions. The soil of Cuba is the best in the world for the raising of sugar-cane, which is, therefore, the most valuable product of the island. Tobacco is raised extensively on the slopes of the western mountains, both soil and climate being suited to the growth of the best quality of tobacco. Coffee, bananas, oranges, and Indian corn are the other noteworthy crops. Iron and copper are found in rich abundance, especially about Santiago de Cuba.

Trade; Cities. The chief imports are flour and manufactured goods from the United States, rice from Europe and from the neighbouring West Indian Islands; and salt fish from Canada and Newfoundland. The larger portion of the trade is with the United States. *Havana*, which has a good harbour, is the chief exporting and manufacturing centre. It is here that large quantities of cigars are made. Transportation has been much improved by the construction of railways in the western part of the island.

HAITI AND SANTO DOMINGO

Trade; Cities. Haiti and Santo Domingo are negro republics on the same island. Coffee is the chief product of Haiti, although cacao and logwood are also exported. *Port au Prince* has practically all the trade, which is mostly with France. The trade of Santo Domingo is chiefly with the United States, and includes sugar, tobacco, and cacao. *Puerto Plata* and *Santo Domingo*, the capital, are the leading ports.

JAMAICA

Products and Trade. The most important products of Jamaica are tropical fruits, sugar, rum, and coffee. The trade is centred at *Port Antonio*. Lines of fruit steamers, employed chiefly in the banana trade, connect this port and *Kingston*, the capital, with Boston, Halifax, and New York.

Hauling sugar and rum to market. A characteristic scene in Jamaica.

PORTO RICO

Porto Rico was ceded to the United States by Spain in 1898. It is about half as large again as Prince Edward Island. Its chief exports are sugar, coffee, and tobacco.

LESSER ANTILLES

Products; Trade. The people of the Lesser Antilles depend largely upon the production of sugar for their living, and import most of their food. Cacao, spices, lime-juice, and fruits are also produced for export. The island of Trinidad is noted for its asphalt, which is obtained from a wonderful pitch lake about 100 acres in extent.

BAHAMAS

Climate; Trade. The Bahama Islands, which have a mild climate, are best known as a winter health resort. The trade is principally with the United States, and includes oranges, pineapples, and other tropical fruits, also sponges.

BERMUDAS

Position; Trade. The Bermudas, a group of small islands of coral formation, about six hundred miles east of North Carolina, belong to the United Kingdom. They do not form a part of the West Indies. The trade of the Bermudas is mostly with the United States, and includes early onions, potatoes, Easter lilies in the spring, and lily bulbs during the rest of the year. *Hamilton*, the chief port, is the capital.

A street in Kingston Jamaica after the earthquake

SOUTH AMERICA

LVIII. THE CONTINENT AS A WHOLE

Size and Position. South America is the fourth in size of all the continents. It is nearly twice as large as Europe, a little smaller than the British Empire without India, and contains about one seventh of the land of the world.

The larger part of South America lies in the Hot Belt, and hence has a tropical climate. The extreme southern tip of South America extends into the Cold Cap, and is the only land of any of the continents in the Southern Hemisphere which has a cold climate.

Coast-Line. The coast-line of South America is regular, except in the south and south-west, where it is bordered by islands and indented by many fiords. There are few bays or estuaries forming harbours; the principal ones are at *Bahia*, *Rio de Janeiro*, *Guayaquil*, and at the mouth of the Plata.

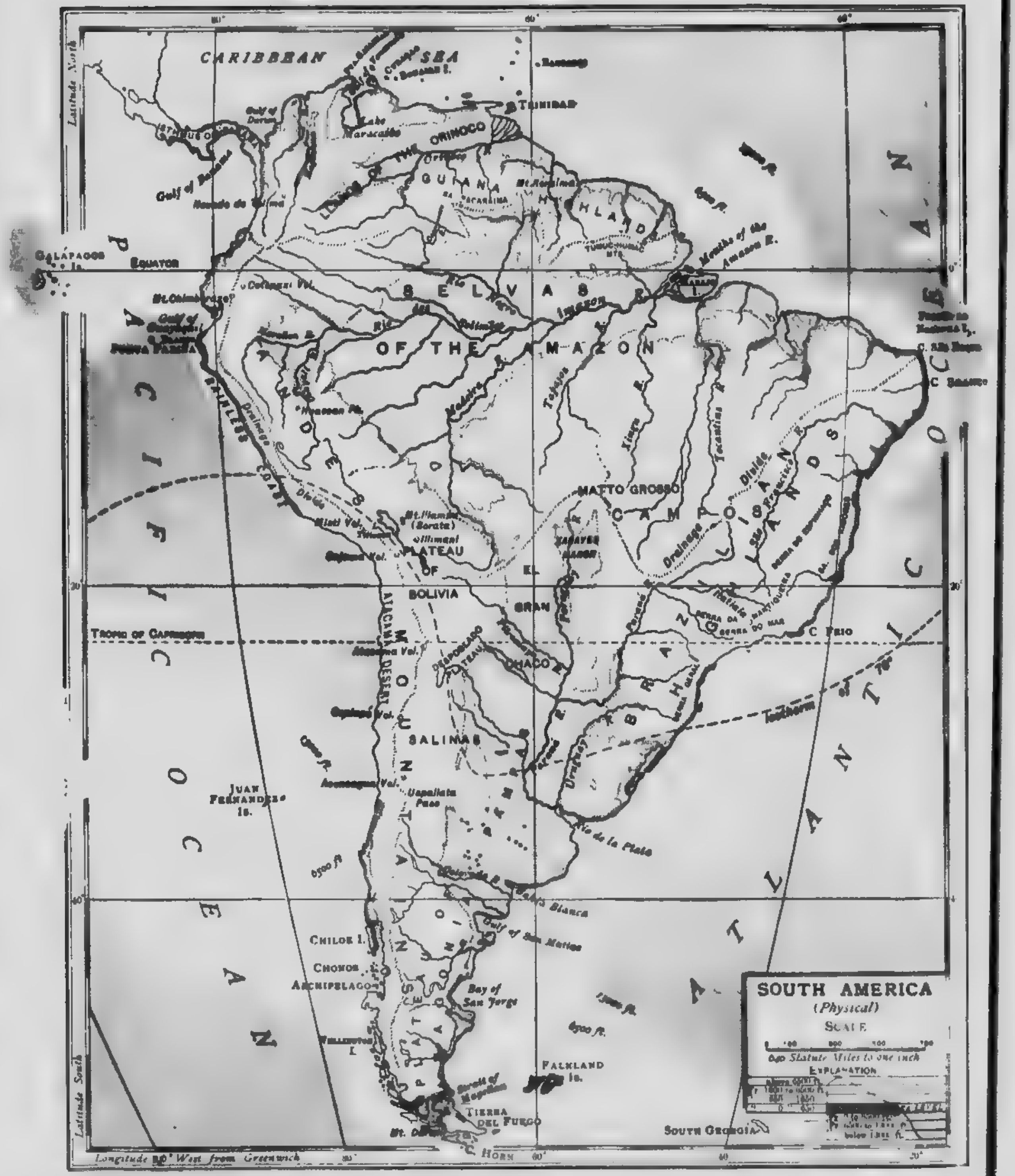
Surface. A large portion of South America is a great lowland, extending from the Caribbean Sea to Southern Argentina, averaging not more than six hundred feet in altitude, and drained by the *Amazon*, the *Orinoco*, and the *Plata*, with their tributaries. There are three highlands — (1) the *Guiana Highlands*, (2) the *Brazilian Highlands*, in the east; and (3) the *Andes Mountains*, which extend the full length of the western coast. In South America, as in North America, the two sides of the continent have been raised by the growth of mountains, and the sea at one time filled the depression between. But rain and rivers have washed down waste from the mountains and filled the depression and built the broad plains now there.

The position of South America among the continents North America is the only land mass near by.

The Andes. The Andean Highland of South America is much narrower than the great Highland of North America, and is unbroken by water gaps. There is only one transcontinental railway line between the countries of the eastern and western coasts, and the passes which can be readily used in travel or trade are few.

In northern South America the Andes Mountains consist of an eastern and western range, separated by the valley of the Magdalena River. South of the equator the mountains increase in altitude, and are bordered on the east by the great plateau of *Bolivia*. Some of the peaks in this region are volcanic; the best known are ***Chimborazo*** and ***Cotopaxi***.

The Bolivian Plateau contains a large area of interior drainage, in which lies the great lake *Titicaca*, at an altitude of 12,500 feet. This lake is nearly half the size of Lake Ontario. High peaks extend south into Chile and the Argentine Republic, where *Aconcagua*, the highest mountain of the Western Hemisphere, is found. The southern Andes have been glaciated and partially drowned; in this way the fiorded coast already mentioned has been formed. In the extreme south the mountains slope off into the plateau of *Patagonia*.


SOUTH AMERICA
(Physical)
SCALE
640 Statute Miles to one inch
EXPLANATION
below 1000 ft.
CARIBBEAN SEA
TRINIDAD
Gulf of Darien
Lake Maracaibo
Gulf of Panama
ISTHMUS OF PANAMA
LLANOS OF THE ORINOCO
Orinoco
GUIANA HIGHLANDS
Mt. Roraima
TUMUCUMAQUE MTS.
Mouths of the Amazon R.
GALÁPAGOS Is.
EQUATOR
Cotopaxi Vol.
Mt. Chimborazo
Gulf of Guayaquil
SELVAS OF THE AMAZON
Amazon R.
Rio Negro
Solimões
Madeira
Tapajos
Xingu R.
Tocantins R.
Huascan Pk.
RAINLESS COAST
Drainage
Divide
ANDES
Misti Vol.
Mt. Illampu (Sorata)
Illimani
PLATEAU OF BOLIVIA
MATTO GROSSO
CAMPOS
EL GRAN CHACO
Paraná R.
Paraguay
Drainage Divide
S. Francisco R.
C. Frio
C. S. Roque
TROPIC OF CAPRICORN
ATACAMA DESERT
Llullaillaco Vol.
SALINAS
MOUNTAINS
PAMPAS
Aconcagua Vol.
Uspallata Pass
Uruguay
Rio de la Plata
JUAN FERNANDEZ Is.
Colorado R.
Bahia Blanca
Gulf of San Matias
CHILOE I.
CHONOS ARCHIPELAGO
Bay of San Jorge
PATAGONIA
FALKLAND Is.
Strait of Magellan
TIERRA DEL FUEGO
C. HORN
SOUTH GEORGIA
PACIFIC OCEAN
ATLANTIC OCEAN
Latitude North
Latitude South
Longitude 80° West from Greenwich
6500 ft.
1800 ft.

The Brazilian Highlands. The Brazilian Highlands occupy a large portion of south-eastern Brazil. The mountains rise to their greatest altitudes close to the coast, where some of the peaks reach a height of over 10,000 feet.

The Guiana Highlands. The Guiana Highlands occupy the larger part of Guiana and of Venezuela and Brazil south of the Orinoco to the selvas. The highest peaks rise to over 8,500 feet.

Rivers. The large rivers of South America lie in the great plains and flow into the Atlantic. These rivers are important routes of commerce. The *Orinoco* is navigable for nearly 1,000 miles, the *Amazon* for 2,600 miles; the basin of the Amazon contains 50,000 miles of navigable streams.

The *Paraná* and *Paraguay* rivers, which together with the *Uruguay* form the *Plata*, are navigable into Brazil, but are interrupted in their head-waters by rapids and falls. The Paraná and Paraguay rivers are important for commerce, however, because they lie in the most productive temperate region of the continent.

Straw boats used by the natives on Lake Titicaca, one of the largest lakes in the world at a high elevation.

Climate. The whole of South America, from the northern coast to the southern tropic, is swept by the trade-winds during the year. In the southern summer, when the Heat Equator is south of the equator in Brazil, the winds blowing in toward this region on the north-east and south-east bring much moisture, which falls as heavy rain.

Heavy rainfall at this season occurs on both sides of the Brazilian Highlands. The southern slopes are watered by the south-east trade-winds, while the northern slopes receive much moisture from the north-east trade-winds.

The north-east trade-winds, moving up the Amazon Valley, produce a heavy rain, with the maximum on the east slope of the Andes, where the higher altitudes cause increased precipitation. A heavy rainfall occurs on the Guiana Highlands also. All these regions have over eighty inches of rain a year, but the heaviest fall is found on the north-western coast, where it reaches a maximum of more than one hundred and sixty inches.

The western coast, from Guayaquil to Valparaiso, being in the lee of the mountains, receives a very slight rainfall,— in some places below twenty inches, and in others less than ten inches. South of Valparaiso, the western coast is swept by the prevailing westerlies, and hence receives considerable rain, the heaviest fall being in winter. The dry regions in these latitudes are found east of the Andes, in the lee of the mountains, and extend to the coast from Bahia Blanca to the Strait of Magellan.

Distribution of Vegetation. The distribution of vegetation here, as in other continents, follows closely the distribution of rainfall. The dry south-eastern section is occupied by dwarf plants. North of this region, near the estuary of the Plata, grassy steppes are found, and dry steppes farther west at the foot of the Andes, where the moisture is less. The grassy steppe, or *pampas* region, has trees only along the streams. Farther north evergreens are found near the coast, and sub-tropical palms grow abundantly in the *Gran Chaco*. This is a wide region in eastern Bolivia, western Paraguay, and northern Argentina. The surface is generally level. The northern part is covered with grass, but the southern portion is an arid plain covered in the wet season with innumerable lagoons.

Southern Brazil lies in the savanna area, and is known as the *campos*. The area is occupied by tall grasses, while farther north cocoa-nut palms are found. The plateau lying west of the Brazilian Highlands, known as the *Matto Grosso*, or *Great Woods*, is really in the savanna area, but the increased altitude causes a heavier rainfall, so that forests abound.

The Amazon Valley is mostly a tropical jungle, commonly called the *selvas*, and contains the densest vegetation on the globe. Palms, figs, and bamboos are the characteristic trees, around which enormous creepers twine, and from which beautiful orchids hang. North and west of the Orinoco, and in the plains of Columbia, is another great savanna area, with tall grasses and isolated trees, known as the *llanos*.

The great four-toed ant-eater, gray with a striking black breast band, inhabits South American forests.

On the west coast tropical forests abound in the north, while the desert of *Atacama*, in the lee of the Andes, in the trade-wind area, is practically without vegetation. In the extreme south, dense forests of evergreen trees occupy the western slopes. This forest region grades into a desert region on the north, and on the south into the dwarf trees and bushes characteristic of cold areas.

On the high mountains there is, of course, a great range of temperature and moisture, and hence of vegetation. In Ecuador and Peru one can find, by going up 12,000 feet, all the characteristic forms of vegetation common in the tropical, temperate, and polar regions.

Animals. South America is a separate animal region, and has already been described. Among the valuable animals are the *alpaca*, the *llama*, and the *vicuña*. The llama is used as a beast of burden, and the vicuña and alpaca furnish valuable fibres for cloth. Horses abound in the pampas and llanos; cattle are raised in great numbers in the wetter, and sheep in the drier and cooler southern grasslands.

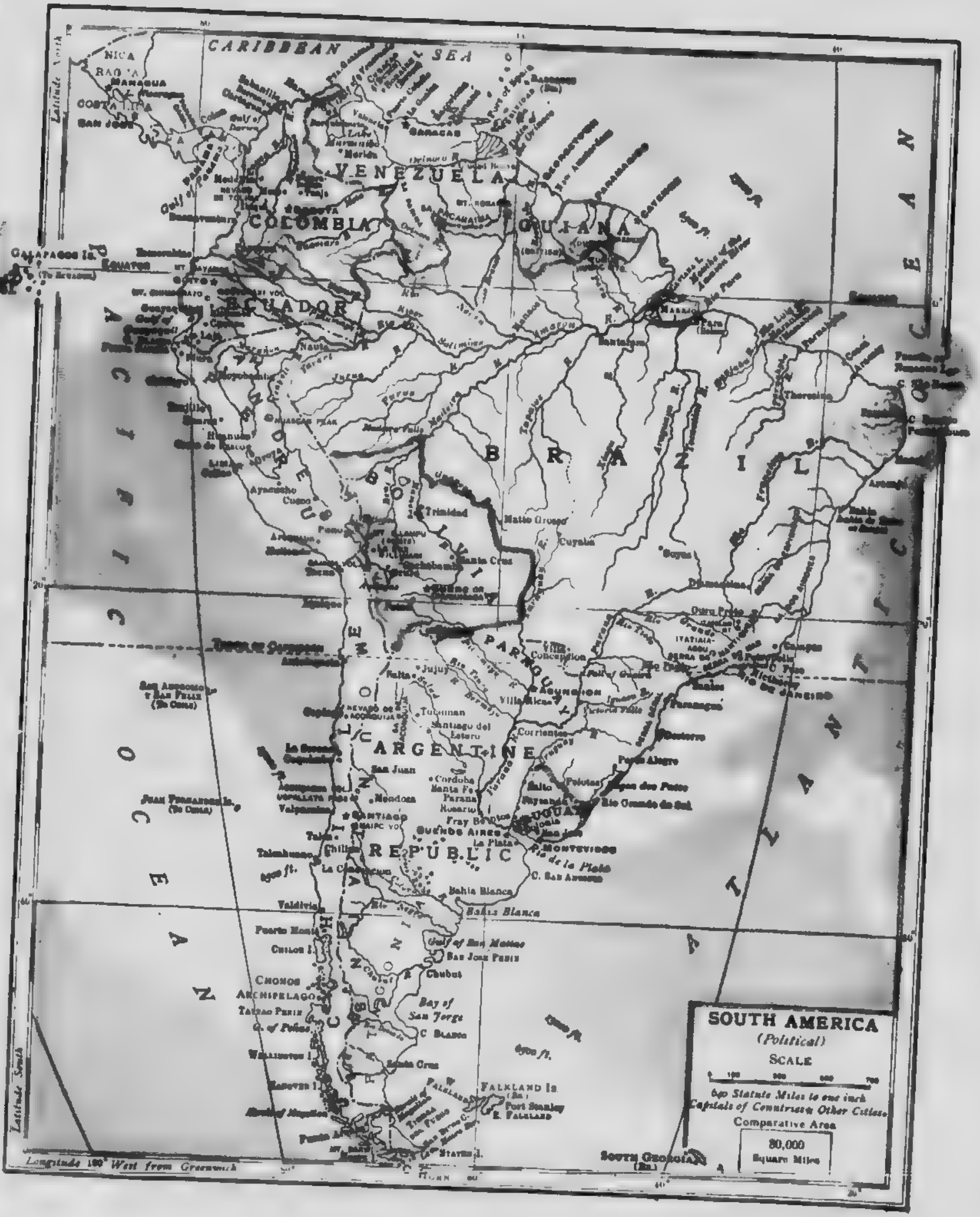
People. South America has the smallest population of any continent except Australia. The natives are mostly Indians; some of them are very primitive, using practically no tools or implements, and some in the basin of the Amazon are even cannibals.

Europeans, especially Italians, Spaniards, and Germans, are found throughout those sections of the country which have the most favourable climate for agriculture and grazing,—especially in Argentina, Brazil, and Chile. Portuguese are particularly numerous in Brazil, and there Portuguese is the national language. Elsewhere, Spanish is generally spoken. The Spaniards are the most progressive and important people, and occupy nearly all the other countries of the continent except the Guianas.

LIX. BRAZIL

Size and Industries. *Brazil* is about as large as Canada without the Provinces of Alberta and Saskatchewan. It lies in tropical and sub-tropical South America, and is

Diamond mining in Brazil.


SOUTH AMERICA
(Political)
SCALE
0 100 300 500 700
640 Statute Miles to one inch
Capitals of Countries Other Cities
Comparative Area
80,000
Square Miles
CARIBBEAN SEA
NICARAGUA
MANAGUA
COSTA RICA
SAN JOSE
CARACAS
VENEZUELA
COLOMBIA
BOGOTA
GUIANA
Galapagos Is.
Equator
QUITO
ECUADOR
Guayaquil
Gulf of Guayaquil
Lima
Callao
Cuzco
Arequipa
Mollendo
Iquique
Tropic of Capricorn
Antofagasta
Amazon R.
Madeira R.
Purus R.
Marajo
Para
Pernambuco
Bahia
B R A Z I L
Matto Grosso
Cuyaba
Goyaz
Ouro Preto
Rio de Janeiro
Santos
Paranagua
Campos
Trinidad
Santa Cruz
Sucre
Potosi
Cochabamba
Tarija
BOLIVIA
PARAGUAY
Villa Concepcion
ASUNCION
Villa Rica
Corrientes
Jujuy
Salta
Tucuman
Santiago del Estero
Catamarca
La Serena
Coquimbo
San Juan
Mendoza
Cordoba
Santa Fe
Parana
Rosario
Fray Bentos
Salto
Paysandu
URUGUAY
BUENOS AIRES
La Plata
MONTEVIDEO
Rio de la Plata
C. San Antonio
Porto Alegre
Pelotas
Rio Grande do Sul
Lagoa dos Patos
ARGENTINE REPUBLIC
Juan Fernandez Is. (To Chile)
San Ambrosio y San Felix (To Chile)
Valparaiso
SANTIAGO
Talca
Talcahuano
Concepcion
Valdivia
Puerto Montt
Bahia Blanca
Gulf of San Matias
San Jose Penin.
Chubut
Chiloe I.
Chonos Archipelago
Taitao Penin.
G. of Peñas
Wellington I.
Hanover I.
Bay of San Jorge
C. Blanco
Santa Cruz
Strait of Magellan
Punta Arenas
Staten I.
C. Horn
FALKLAND Is. (Br.)
Port Stanley
E. Falkland
South Georgia (Br.)
P A C I F I C O C E A N
A T L A N T I C O C E A N
Longitude 80° West from Greenwich
Latitude North
Latitude South

chiefly occupied by forests and grazing lands. There is comparatively little cultivated land. The principal agricultural districts are along the south-eastern coast and in the highland section just north of Rio de Janeiro. In the drier southern regions there are important colonies of Germans and Italians, who devote most of their attention to grazing, although some manufacturing of woollen goods is carried on.

Rio de Janeiro, the capital of Brazil.

Products. The highland region north of Rio de Janeiro produces three fourths of the coffee of the world. Other important and valuable agricultural products are sugar, cotton, tobacco, and manioc. Manioc, the chief food of the people, is a starchy substance obtained from the same plant as tapioca, which it resembles. But the great wealth of Brazil lies in its forests and minerals. Rubber is the most important product of the Amazon region; and cacao, from which cocoa is made, is also produced abundantly. Other products are Brazil-nuts and valuable woods.

The more important minerals are gold, diamonds, and iron. Iron is little mined on account of the absence of the coal necessary for smelting; and the diamond industry is not so important as it once was because of the much greater and better deposits at Kimberley in South Africa.

Trade. Brazil has nearly one third of the commerce of South America, chiefly with the United Kingdom, France, Germany, and the United States. **The principal exports are coffee and rubber, though hides and cotton are exported also. The imports are food stuffs, coal, cottons, and machinery, for the most part from the United Kingdom and Germany; and wheat and flour from the United States.**

There are few railways except in the coffee region; interior trade depends on the extensive rivers. Oceanic trade is centred at a few ports. *Rio de Janeiro*, the capital and chief port of the republic, has a fine harbour. *Santos*, being nearer to the coffee-growing region, leads in the export of coffee. *Bahia* and *Pernambuco* trade in sugar, coffee, and tobacco.

People. The people are mainly of Portuguese descent. There are also many Germans, Russians, and Spaniards. Brazil, a Portuguese colony, after a time became a kingdom, at first subject to Portugal, but later independent. As the result of a revolution in 1889, it became the Republic of the United States of Brazil.

LX. ARGENTINE REPUBLIC

Size and Surface. The *Argentine Republic* extends from north of the southern tropic to the extremity of the continent, and includes part of the island of *Tierra del Fuego*. The area is about a third that of Canada, and is mostly a great plain, broken only by occasional low hills. The southern portion is practically uninhabited, and the *Gran Chaco* is occupied by wild Indian tribes. The Argentine Republic is the largest country in the temperate portion of South America, and the range of climate from arid to rainy, and from tropical to temperate ensures a wide range of products. It has, therefore, a better opportunity for future development than any other portion of the continent.

People. The people are largely of Spanish descent. There are also many Indians, besides Italians, French, Welsh, and Germans. The Republic was established in 1853. The constitution, modified in 1862, is now almost the same as that of the United States.

Industry. The abundance of grass on the pampas makes the Argentine Republic a great grazing country, although agriculture is being developed along the lower Paraná by settlers from southern Europe. Wheat, flax, and maize are the chief agricultural products; the acreage devoted to wheat has increased rapidly, and these plains are now one of the great wheat-producing sections of the world.

Trade; Cities. The Argentine Republic is, next to Australia, the chief wool-producing and wool-exporting country in the world. Frozen mutton is sent to Europe, particularly to the United Kingdom, and live beef to the other nations of western Europe. Sun-dried, or jerked beef, is sold to the more tropical countries of South America. These products, with hides, form more than half the exports, which also include gold, silver, and copper. Iron, steel, and textiles are the chief imports.

Interior trade is greatly aided by the fine system of navigable rivers and by railways, with which this republic is better supplied than any other country of South America.

Buenos Aires, the capital, is the chief port of South America, and the largest city in the Southern Hemisphere.

LXI. URUGUAY AND PARAGUAY

URUGUAY

Climate and Industry. The surface and climate of *Uruguay* are similar to those of the northern part of the Argentine Republic. Grazing is therefore the principal occupation, though agriculture is increasing. Wheat, grapes, olives, and tobacco are raised.

Transportation in Uruguay. To convey the products to the ports, often several teams of oxen are used to draw the heavily loaded wagons across the country.

Trade. The cattle products of Uruguay are exported chiefly in the form of jerked beef and beef extract. Wool is sent to Europe and the United States, and some wheat is exported to Brazil. A large part of the trade is with the United Kingdom.

Montevideo is the capital and chief city of the republic.

PARAGUAY

Surface, Industry, and Trade. *Paraguay* is a rich but undeveloped country, largely occupied by Indians. The surface is made up of plains and low mountains covered with forests. The plains are chiefly devoted to the production of Paraguay tea, or *maté*, oranges, and tobacco. Paraguay tea is cheaper than Asiatic tea, and its use in South America is steadily increasing. Lumber is the principal forest product, and is sent to the Argentine Republic and Uruguay, both of which lack timber. These products, together with hides and tobacco, are the chief exports. The principal imports are cotton goods and wine.

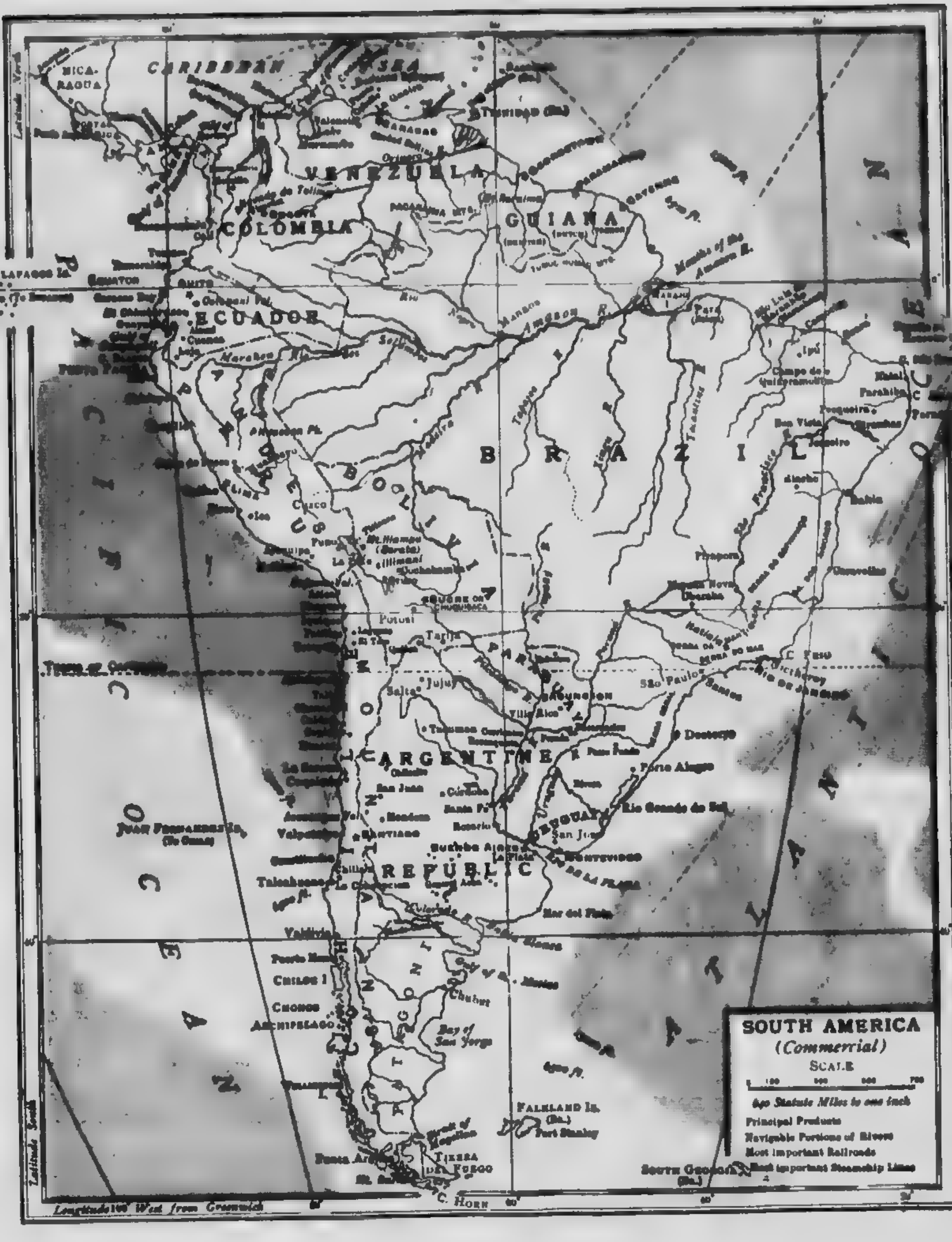
Along the rocky and precipitous coast of Patagonia.

Asuncion, the capital, from its position on the Paraguay River, is the most flourishing town and commercial port in the republic.

LXII. CHILE

Chile, one of the most progressive republics of South America, is a long, narrow country, about 50,000 square miles smaller than British Columbia. It includes many islands, and all the land on both sides of the Strait of Magellan. Northern Chile is a desert, and agriculture is possible only where irrigation is practised.

Products. The main products of northern Chile are nitrate of soda and guano. The agricultural portion lies in the coastal area


SOUTH AMERICA
(Commercial)
SCALE
Statute Miles to one inch
Principal Products
Navigable Portions of Rivers
Most Important Railroads
Most important Steamship Lines
CARIBBEAN SEA
NICARAGUA
TRINIDAD (Br.)
VENEZUELA
COLOMBIA
GUIANA
GALAPAGOS Is.
ECUADOR
Amazon R.
Mouths of the Amazon R.
BRAZIL
PERU
BOLIVIA
Cuzco
La Paz
Potosi
Tarija
Jujuy
Salta
PARAGUAY
Asuncion
Villa Rica
São Paulo
Santos
Rio de Janeiro
C. Frio
Porto Alegre
Rio Grande do Sul
ARGENTINE REPUBLIC
Cordoba
Santa Fe
Rosario
Mendoza
San Juan
Valparaiso
SANTIAGO
JUAN FERNANDEZ Is.
URUGUAY
San José
MONTEVIDEO
Buenos Aires
La Plata
Mar del Plata
Talcahuano
Valdivia
Chubut
Bay of San Jorge
CHILOE I.
CHONOS ARCHIPELAGO
FALKLAND Is. (Br.)
Port Stanley
TIERRA DEL FUEGO
Punta Arenas
C. HORN
SOUTH GEORGIA (Br.)
PACIFIC OCEAN
ATLANTIC OCEAN
Longitude West from Greenwich
Latitude North
Latitude South

between *Santiago* and *Valdivia*. This portion is the most densely populated; wheat, cattle, and fruits are the chief products. Both temperate and tropical fruits are cultivated. South of Valdivia the country is forested, and lumbering and fishing are the chief occupations.

Nitrate works in Chili

Trade; Cities. Nitrate of soda, copper, iodine, and wheat are the leading exports of Chile; the value of the nitrate is far greater than that of all other exports combined. Wheat is exported to tropical South America, especially to Peru and Ecuador. Sugar, beer, wagons, and machinery are manufactured to a limited extent, but most of the products are consumed at home. Textiles are the principal imports. The trade is chiefly with Great Britain, Germany, and the United States.

Good roads and railways are few, and the high mountain wall of the Andes has prevented trade with the interior. Now, a tunnel 12,000 feet above sea-level and five miles long pierces the Andes and affords direct railway communication between Valparaiso and Buenos Aires, thus linking the two republics commercially.

Valparaiso, the port of Santiago, the capital, is the most important town on the Pacific coast of South America. *Iquique*, near the nitrate fields, is the centre for the exportation of that product. *Punta Arenas*, on the Strait of Magellan, is a calling station for steamers; but sailing vessels usually go around Cape Horn on account of the strong tide and currents of the Strait of Magellan.

LXIII. ECUADOR, PERU, AND BOLIVIA

Surface. These three republics are extremely mountainous countries. Peru and Ecuador have a narrow lowland on the west, and broad table-lands and plains on the east. Bolivia has mountains on the west, and the broadest plateau of the Andes in the east. With the exception of Paraguay, it is the only country in South America which has no coast.

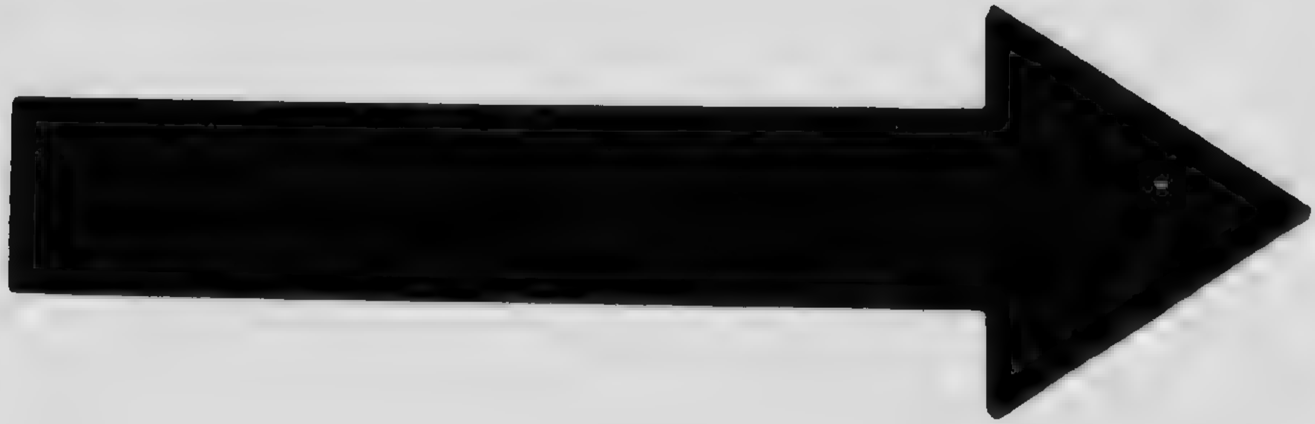
Products and People. The coastal lowland of Peru is dry in the south, and has extensive deposits of nitrate of soda. Farther north in Ecuador, owing to the increased rainfall, the land may be tilled. The mountains are high, with few passes, but their slopes are cultivated in places.

The eastern regions of Peru and Ecuador have dense forests. The mountains contain rich deposits of silver. The inhabitants are mainly Indians, but they are intelligent, and far superior to the other Indians of South America.

Trade. Cacao, grown on the lowlands of Ecuador, is the chief export of that country, and is sent to France, Spain, and the United States.

Cotopaxi, one of the most famous peaks of the Andes.

Guayaquil has the best harbour on the Pacific coast. *Quito*, practically on the equator, is the



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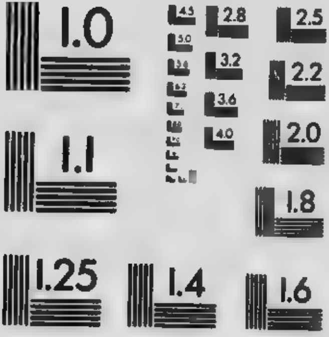
(ANSI and ISO TEST CHART No 2)



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capital of Ecuador and, owing to its altitude, has a delightful climate.

Sugar and metallic ores, cotton, wool, and rice are the chief exports of Peru, though cinchona and rubber are exported in large quantities from the Andes down the eastern rivers. The imports are textiles and machinery.

Native carrier. A street scene in Quito, Ecuador.

Interior trade is carried on with difficulty, because of bad roads and the lack of railways. A railway crossing the Andes at a height of 15,600 feet has been built from Lima over the mountains to the silver mines. *Callao* is the port of the capital, *Lima*, which is the chief city of Peru.

Bolivia is dependent for its trade upon the neighbouring countries. Silver, tin, copper, and rubber are sent down the eastern rivers. Clothing, textiles, and hardware are imported. *Sucre* is the capital, and *La Paz* the largest city.

LXIV. COLOMBIA, VENEZUELA, AND GUIANA

Development and Climate. *Colombia*, *Venezuela*, and *Guiana* are undeveloped countries, though all are rich in minerals and agricultural lands. Guiana is composed of three colonies held by the United Kingdom, the Netherlands, and France respectively. The climate of all three countries is everywhere, except in the mountain districts, hot and moist. The lowlands are malarial; the highlands, healthful.

Products. Cattle are raised in the plains, and coffee is grown on the hill slopes. Rice for home consumption is produced in the lowlands. Sugar is grown in abundance in the lowlands of Guiana, and is the chief product of importance, although it is now giving way to cacao and coffee, because the people have found it best not to depend upon one crop only. Rubber, cinchona, tobacco, and sugar are produced in Colombia; cacao, in Venezuela.

Gold and silver are found in all these countries, but the mining industries are best developed in Venezuela and Colombia.

Trade; Cities. Few of the towns of Guiana are important in trade. *Georgetown*, the chief commercial city, carries on trade mainly with the United Kingdom and the United States. Sugar is the chief export; and machinery, hardware, and food products are the principal imports.

The chief inland towns of Venezuela are *Carácas*, the capital, and *Valencia*. This republic has practically no railways and few roads. Hence, its interior trade is carried on with difficulty, except in the valley of the Orinoco, which is navigable to the foot of the Andes.

In Colombia the Magdalena River is the highway of trade, and *Barranquilla*, at the mouth of this river, is the chief port. *Bogotá*, the capital of the republic, is considered the most beautiful city of South America, and is well situated in a rich agricultural country.

SUMMARY

South America is, on the whole, unprogressive, except in the countries of the temperate belt and in Brazil. The governments are unstable, revolutions are frequent, and business cannot, therefore, be carried on successfully. The continent is deficient in railways and highways, and hence the natural wealth is not developed. The exports are mostly mineral and cattle products, except in the few scattered agricultural regions. The imports are chiefly food stuffs and manufactured goods, especially textiles and steel.

EUROPE

LXV. THE CONTINENT AS A WHOLE

Europe and Eurasia. The so-called continent of *Europe* is really a portion of the continent of Eurasia (*Europe and Asia*), but it has so long been considered as a separate continent that it is usually treated as such.

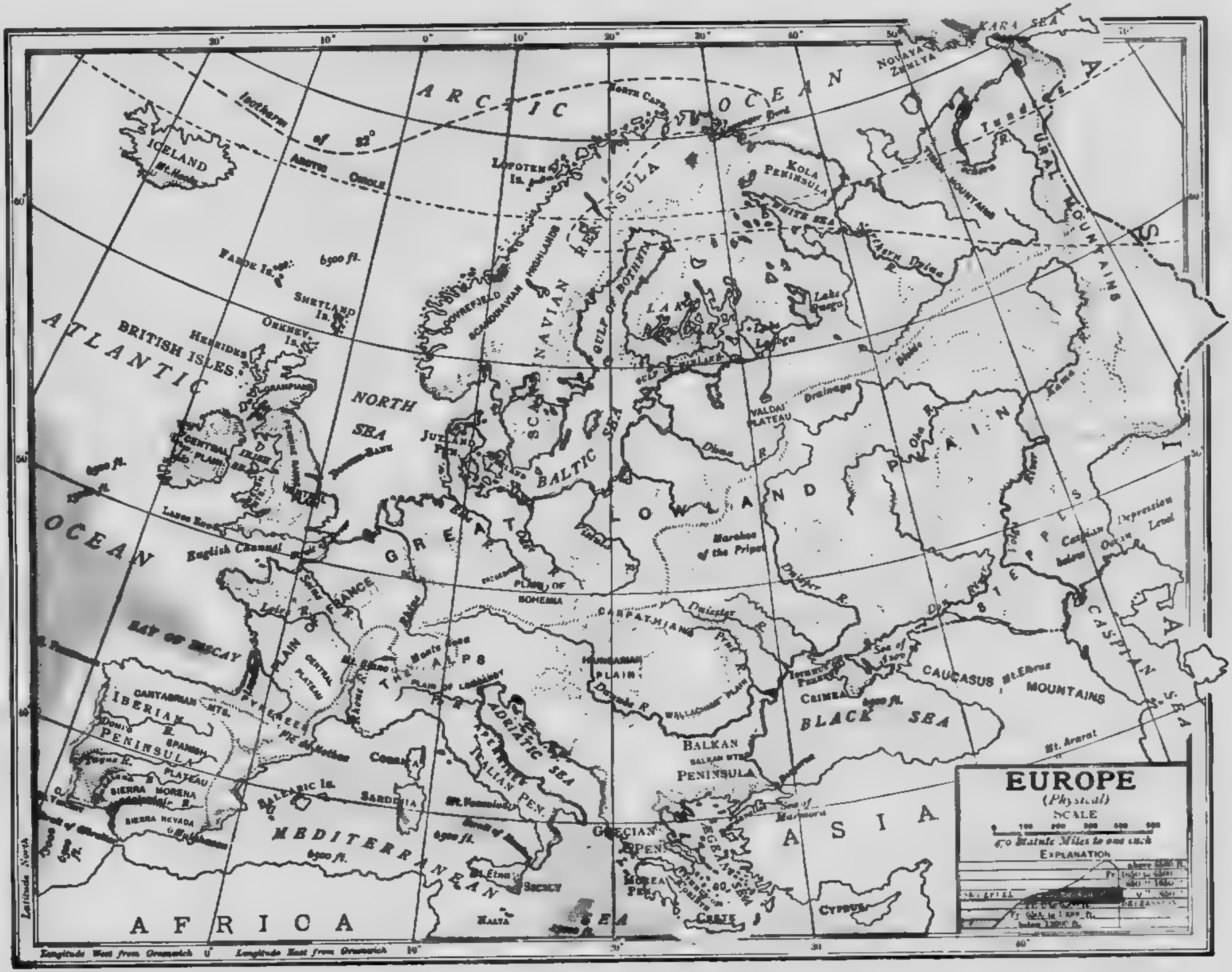
Size and Position. Europe is the smallest continent except Australia. Its area is less than half that of North America and is not much larger than that of Canada. The facts that it has long contained the leading nations of the world, and that its position gives it exceptional advantages for commerce, have contributed to make Europe the most important of the continents.

The position of Europe among the continents.

Coast-Line. Europe has the longest coast-line in proportion to its area of any of the continents. This is of great importance, because it has allowed many nations to have ready access to the ocean. The Atlantic coast of Europe, from the Bay of Biscay northward, is bordered by a broad, shallow continental shelf, which surrounds the United Kingdom and extends beyond Iceland. It is over these shallows that one of the best fishing grounds in the world is found.

Surface. Europe, like North and South America, consists of two extensive highland areas, with a great lowland area lying between them. The lesser highland in north-western Europe, extends in a broken line from Scandinavia to Ireland. It may be compared with the Appalachian Highland in our own continent, and the Brazilian Highlands in South America. The greater highland area of Europe begins in the mountains of Spain and continues through the Alps, the Balkans, and the Carpathians, to the Black Sea. It is interesting to compare this highland area with the Rocky Mountain Highland of North America, and the Andes Mountains of South America. In the Americas each main highland runs north and south; in Europe the main divide runs east and west. Between the great highland areas of each of these three continents is a great lowland.

The Great Lowland Plain. The larger part of Europe is a great lowland plain, extending from the Atlantic Ocean on the west to the plains of Asia on the east. Eastern Europe lies almost entirely in this lowland, and its surface is in general rolling, with only a few slight elevations like the *Valdai Plateau* in Russia. The northern part of the great lowland has been glaciated, and hence contains many lakes, as in Finland, Scandinavia, and the Valdai Plateau. In the eastern part there are many swamps. Across it stretches the natural divide between the rivers flowing south — the *Volga*, the *Don*, and the *Dnieper*, which are long; and those flowing north and west — the *Pechora*, the *Northern Dvina*, and the *Duna*, which are short.


EUROPE
(Physical)
SCALE
0 100 200 300 400 500
470 Statute Miles to one inch
EXPLANATION
ARCTIC OCEAN
ATLANTIC OCEAN
NORTH SEA
BALTIC SEA
GULF OF BOTHNIA
WHITE SEA
KARA SEA
NOVAYA ZEMLYA
ICELAND
Isotherm of 32°
Arctic Circle
FAROE Is.
6500 ft.
SHETLAND Is.
ORKNEY Is.
HEBRIDES
BRITISH ISLES
GRAMPIANS
CENTRAL PLAIN
English Channel
BAY OF BISCAY
LOFOTEN Is.
North Cape
SCANDINAVIAN PENINSULA
SCANDINAVIAN HIGHLANDS
DOVREFJELD
KOLA PENINSULA
Lake Onega
Lake Ladoga
JUTLAND PEN.
URAL MOUNTAINS
Timan Mountains
Petchora R.
Northern Dvina
VALDAI PLATEAU
Drainage
Dvina R.
Oka R.
Kama R.
Volga R.
GREAT LOWLAND PLAIN
STEPPES
Marshes of the Pripet
Dnieper R.
Dniester R.
Don R.
Caspian Depression below Ocean Level
CASPIAN SEA
CAUCASUS MOUNTAINS
Mt. Elbrus
Mt. Ararat
Sea of Azov
CRIMEA
BLACK SEA
PLAIN OF BOHEMIA
CARPATHIANS
HUNGARIAN PLAIN
WALLACHIAN PLAIN
Danube R.
BALKAN PENINSULA
BALKAN MTS.
Sea of Marmora
ÆGEAN SEA
GRECIAN PEN.
MOREA PEN.
CRETE
CYPRUS
THE ALPS
Mont Blanc
Plain of Lombardy
Po R.
ADRIATIC SEA
APENNINES
ITALIAN PEN.
Mt. Vesuvius
Mt. Etna
SICILY
MALTA
CORSICA
SARDINIA
BALEARIC Is.
MEDITERRANEAN SEA
PLAIN OF FRANCE
CENTRAL PLATEAU
Seine R.
Loire R.
Rhone R.
Rhine R.
PYRENEES
Pic de Nethou
CANTABRIAN MTS.
IBERIAN PENINSULA
SPANISH PLATEAU
Douro R.
Tagus R.
SIERRA MORENA
SIERRA NEVADA
Guadalquivir R.
Strait of Gibraltar
AFRICA
ASIA
Latitude North
Longitude West from Greenwich 0° Longitude East from Greenwich
10°
20°
30°
40°
50°
60°

The Highlands of Scandinavia, including those of the United Kingdom. The Scandinavian Highlands rise to an altitude of 8,400 feet, and extend in an unbroken range throughout the Scandinavian Peninsula. These highlands have been glaciated, and therefore abound in lakes, while the lower lands are covered with rolling moraines, so that the whole region has a rough, hilly surface.

The Scandinavian Highlands extend south and west into the United Kingdom, forming the highlands of Scotland, Wales, and northern England. Highlands also skirt the rim of Ireland, and nearly surround its central plain. All the highland region of the United Kingdom has been glaciated, and lakes abound.

The snow-clad peaks of the Alps. Notice the glacier and the mountain-house on the left.

The Alps. The highest portion of the great highland of southern Europe, which begins at the Atlantic Ocean and extends eastward to the Black Sea, is the Alps. These extend in a semicircle from south-eastern France to the head of the Adriatic Sea, where they merge into the north-western end of the mountains of the Balkan Peninsula and Greece.

The Alps contain many large glacial lakes, from which flow the *Rhine*, the *Rhone*, the *Aar*, and the *Ticino*. These mountains are so high and so cold, and lie in so moist a region, that they contain many famous glaciers. These are more visited than any others in the world.

Mountains of the Iberian Peninsula and Italy. South-west of the great highland region is the Iberian Peninsula, another distinctly highland a[illegible]omposed in large part of a plateau broke[illegible]any short, nearly parallel mountain ranges [illegible]wn as *sierras.* The highest of these ranges is the *Cantabrian Mountains*, an extension to the west of the *Pyrenees.* The Pyrenees form an important natural barrier between Spain and France. The only lowlands in this area are found in narrow belts along the eastern coast, and along the lower courses of the rivers which flow from the plateau to the Atlantic Ocean.

South of the Alps lies the peninsula of Italy, over the greater part of which extend the Apennines and the volcanic heights along the western coast. The mountains are so close to the sea that the rivers of Italy are all short, except the *Po*, which drains the great plain between the Apennines and the Alps. Italy also contains the well-known volcano, *Mount Vesuvius*; and south, on the island of Sicily, is *Mount Etna.*

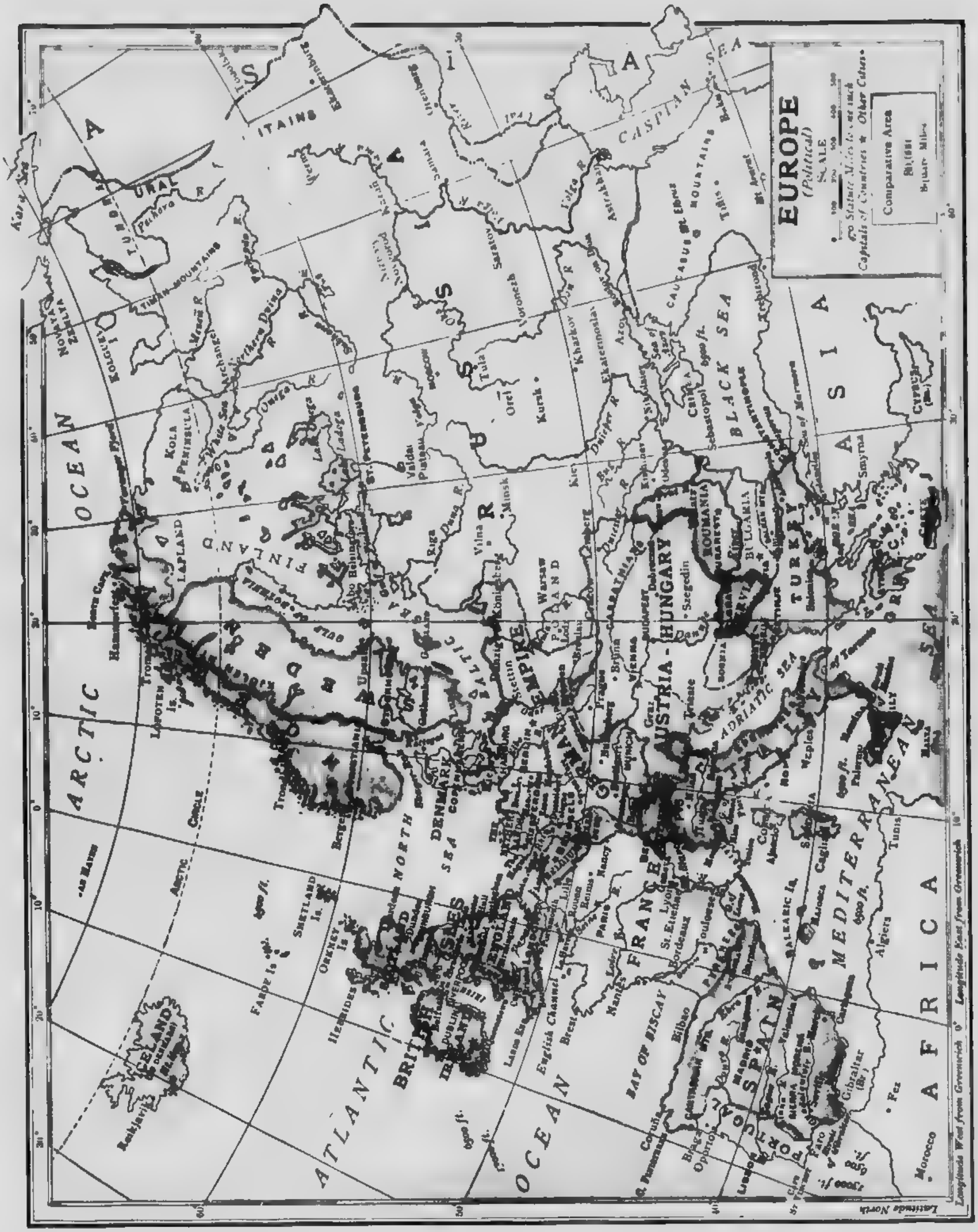
Highlands of France. The *Central Plateau* of France consists of a series of old, worn-down mountains, above which rise many cones of extinct volcanoes. This region forms the divide from which radiate the *Seine*, the *Loire*, and the *Garonne* rivers. The Central Plateau is bordered on the east by the *Cevennes*, which face the valley of the Rhone in a steep and continuous cliff. To the north-east are the *Vosges Mountains* and the highland of the *Ardennes*, separated from the highlands of Germany by a valley similar to that of the Rhone. In this valley the *Rhine* runs for a part of its course.

The Carpathian, Balkan, and Ural mountains. The eastern portion of the great highland of Europe is made up of the Carpathian Mountains, which bound the plain of Hungary on the north and east. These mountains are separated from the highlands of the Balkan Peninsula by the narrow pass of the Danube known as the *Iron Gate.*

The B[illegible]kan Peninsula is, throughout, a mountainou[illegible]untry. The northern portion, which extend[illegible]east to the Black Sea, is mainly occupied by the Balkan Mountains. Highland ridges also extend south through Turkey into Greece. It is the nearly drowned peaks of the south-eastern ends of these highland ridges that form the many islands of the great archipelago of the Ægean Sea.

Bounding Europe in part on the east, is the ridge of the Ural Mountains. These are more a rise of land than a mountain range, and form distinct features in the landscape only in the northern and southern parts of their course.

Climate and Vegetation of Europe. The whole of Europe north of the Alps and the Carpathians is, throughout the year, in the track of the westerly winds. North-western Europe lies directly in the path of these winds, blowing from the Atlantic. It has for this reason a more even climate than eastern Europe, which lies nearer the interior


EUROPE
(Political)
SCALE
Statute Miles
Capitals of Countries
Other Cities
Comparative Area
Square Miles
ARCTIC OCEAN
ATLANTIC OCEAN
NORTH SEA
BALTIC SEA
MEDITERRANEAN SEA
ADRIATIC SEA
BLACK SEA
CASPIAN SEA
BAY OF BISCAY
ARCTIC CIRCLE
ICELAND
BRITISH ISLES
FRANCE
SPAIN
PORTUGAL
GERMAN EMPIRE
AUSTRIA-HUNGARY
ITALY
DENMARK
SWEDEN
NORWAY
FINLAND
LAPLAND
RUSSIA
POLAND
ROUMANIA
BULGARIA
SERVIA
TURKEY
GREECE
ASIA
AFRICA
URAL MOUNTAINS
CAUCASUS MOUNTAINS
CARPATHIAN MTS.
Longitude West from Greenwich 0° Longitude East from Greenwich
Latitude North

of the great land mass of Eurasia, and is subjected to the great seasonal range of temperature characteristic of regions situated at a great distance from the ocean.

The direction of the highlands of a continent has an important influence upon its climate; thus, with the highlands running east and west, the moisture-laden winds from the Atlantic Ocean are free to sweep eastward and carry a moderate amount of rain to the central and eastern portions of the continent.

In winter, when the wind system of the world has moved far south, Southern Europe is swept by westerly winds. In summer when the wind system is farthest north, it lies in the northern trade-wind belt.

The highest Peaks of the Pyrenees, showing flocks grazing on the lower slopes.

North-western Europe. Owing to the proximity of the ocean and to the fact that the continent is cooler than the ocean in winter and warmer than the ocean in summer, the annual range of temperature along the north-western coast of Europe is very slight. The cold winter winds come from the north-east, but they blow for a short time only, and are not so severe as the winds that reach the eastern coasts of North America from the interior of that continent.

The greatest rainfall is in the west, especially on the western side of the mountains of Norway and the United Kingdom. Here the larger portion of the rain comes in winter, when the moisture, brought from the ocean by the westerly winds, is condensed in passing over the colder land. The constant moisture of the air of western Europe is of great importance in determining the kinds of industries that can be carried on. For instance, fibres of cotton do not break so easily when damp as when dry; and fine spinning can, therefore, be done only where the air is always moist, as it is about Manchester, England. The condition of the air which favours cotton-spinning does not favour flour-milling, because wheat grains can be ground fine only when they are dry and brittle. Flour-milling is, therefore, more successful in the eastern portion of the continent.

In the west, where the moisture is abundant, potatoes, oats, and barley are largely grown; while wheat, which requires an abundance of sunshine, is grown more generally in southern Italy, France and Germany. Rye and flax are grown in the centre of this climatic area.

The distribution of forest trees also varies according to the climate. In the north, especially in Scandinavia, the trees are mostly cone-bearing and evergreen. Toward the south, some of the trees are deciduous and some evergreen; while in the extreme southern part of the area, as in similar regions in Canada, only deciduous trees, like the beech, oak, elm, ash, and maple are found, except on the higher mountains.

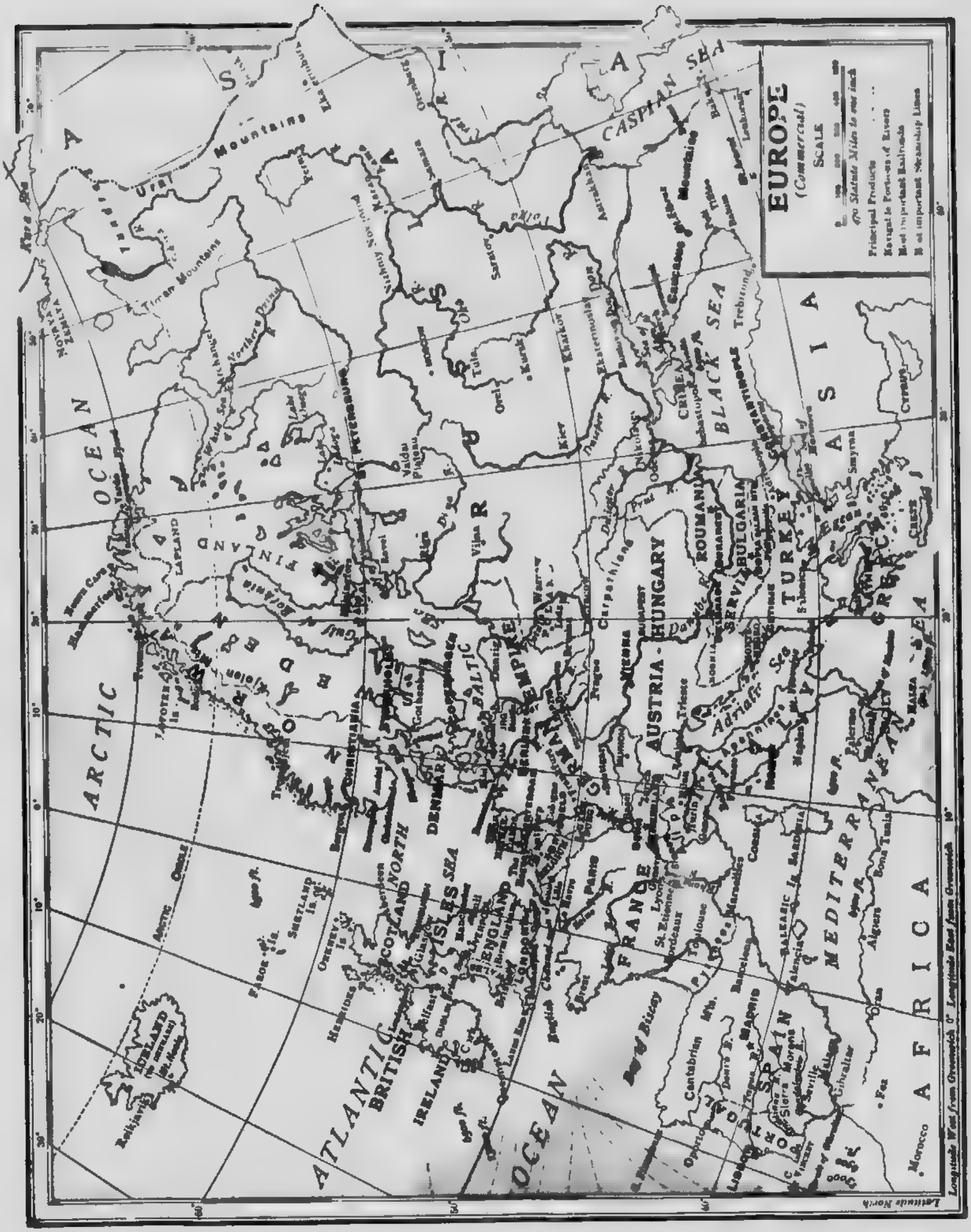
The extreme northern portion of this area merges into the *tundra* region, with its extensive bogs, where many flowers bloom luxuriantly in the short summer, but where trees are practically absent.

In the broad plains, or tundra, of north-eastern Europe the winters are severe. The climate is comparatively dry, because the winds have lost a large part of their moisture on the western highlands, and because the winter winds, blowing from the land rather than from the water, carry but little moisture.

Eastern and South-eastern Europe. Just to the south of the tundra is a forest belt containing cone-bearing trees, while south of the isothermal line of sixty degrees (average summer temperature) is the *black earth* and *steppe* region, which becomes increasingly dry to the south-east. Here abundant grasses are found, and grazing is the chief industry.

Southern Europe. In winter the almost continuous wall formed by the Pyrenees, the Alps, and the Balkan Mountains prevents the cold winds of the interior from reaching southern Europe; hence it has in general a warm and balmy winter climate, and for this reason has many noted health and pleasure resorts. The summers are practically rainless, and sunshine abounds.

Wheat and maize, both of which require prevailing clear weather, are the principal grains grown here. The character of the climate is best shown, however, by the extensive areas devoted to sub-tropical fruits, like figs,


EUROPE
(Commercial)
SCALE
Statute Miles to one inch
Principal Products
Navigable Portions of Rivers
Most Important Railroads
Most Important Steamship Lines
ARCTIC OCEAN
ATLANTIC OCEAN
NORTH SEA
BALTIC SEA
BLACK SEA
CASPIAN SEA
MEDITERRANEAN SEA
Adriatic Sea
Bay of Biscay
ASIA
AFRICA
RUSSIA
SWEDEN
NORWAY
FINLAND
LAPLAND
DENMARK
BRITISH ISLES
SCOTLAND
ENGLAND
IRELAND
ICELAND
FRANCE
SPAIN
PORTUGAL
GERMAN EMPIRE
AUSTRIA-HUNGARY
ITALY
ROUMANIA
BULGARIA
SERVIA
TURKEY
GREECE
CRIMEA
Ural Mountains
Caucasus Mountains
NOVAYA ZEMLYA
SHETLAND Is.
ORKNEY Is.
FAROE Is.
LOFOTEN Is.
BALEARIC Is.
SARDINIA
CRETE
Cyprus
Longitude West from Greenwich 0° Longitude East from Greenwich
Latitude North

pomegranates, grapes, oranges, lemons, and olives.

Distribution of Animals. In the north the fur-bearing animals are found in great numbers. Here also are the reindeer, which subsist upon the reindeer moss, one of the characteristic plants of the tundra area.

A Laplander with his reindeer.

In the western rainy region and in the mountain valleys, where grass is abundant, great numbers of horses and cattle are raised. Sheep thrive in the south-east, where it is drier, and goats are also found in large numbers in the south and south-east. In the driest parts of south-eastern Europe, as in that portion of Asia lying to the east and south-east, many camels are used.

The People of Europe. Europe is the most densely and completely inhabited of all the continents of the world. It is divided among many nations. This is owing to its physical features, some parts being separated from the rest by mountains, and others by bodies of water. The larger number of the people belong to the *white race* and the remainder to the *yellow race.*

The people about the Mediterranean Sea belong to the dark division of the white race. Most of them have dark hair and eyes and narrow heads, e.g., the Italians and the Spaniards, and speak languages that are closely related. In the extreme north, the people are fairer, with blue eyes, e.g., the Swedes. In Turkey, Finland, and in south-eastern and northern Russia, the native inhabitants for the most part are related to the yellow race, and have the oblique eyes which characterize that people.

LXVI. THE UNITED KINGDOM OF GREAT BRITAIN AND IRELAND

The "Mother Country." England, Wales, Scotland, and Ireland are known as the *United Kingdom of Great Britain and Ireland*, and, sometimes as the "Mother Country" of all the English-speaking peoples of the world. These countries together with about 5,000 contiguous small islands constitute the *British Isles.* Canada, Australia, and large parts of Asia and Africa are *colonies* of the United Kingdom. The colonies, dependencies, and the United Kingdom together, are called the *British Empire.*

Great Britain is the largest island in Europe, and the most important island in the world. It is 600 miles long and from 32 to 360 miles wide. It is about one fortieth as large as Canada. The second island in size among the British Isles is Ireland, which is 300 miles long by 175 miles wide at its broadest part. The people of the United Kingdom are noted for their energy, intelligence, and high ideals.

ENGLAND AND WALES

Extent and Surface. England and Wales occupy the southern two thirds of the island of Great Britain. The middle and south-eastern parts of England form a rich farming and grazing lowland. The west is broken by mountains, the Cambrian occupying the greater part of Wales, and the Cumbrian and Pennine ranges the north-western and central parts of England.

The Coast-Line. The coast-line is long, and it is so indented by inlets that there is no place more than seventy miles from the sea.

The east coast is in general low; so low in some parts that embankments are necessary to

Houses of Parliament, London.

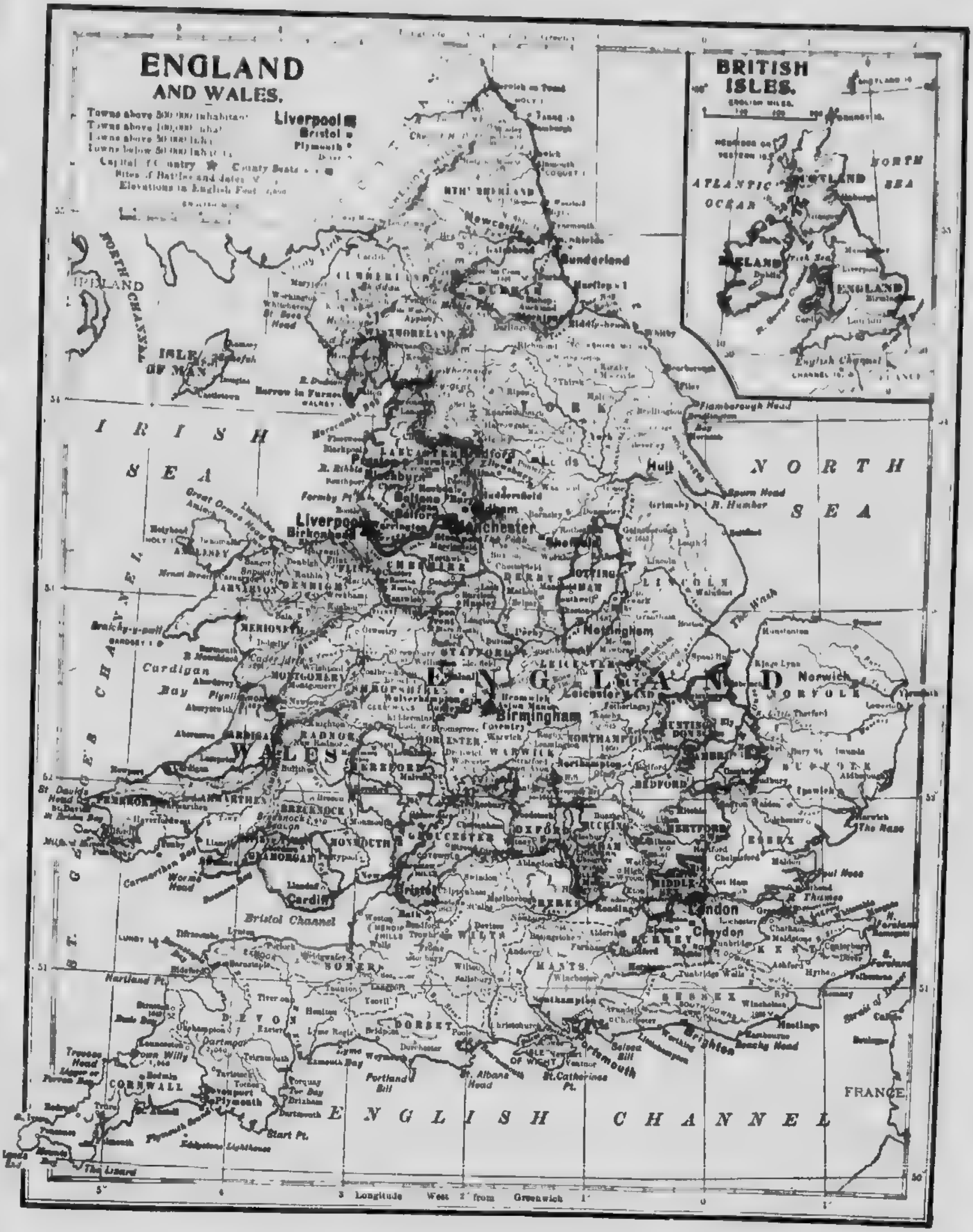
prevent inroads of the sea. The south coast east of the *Isle of Wight* is a low clay shore with here and there chalk cliffs. West of this island the shore is high and precipitous, and indented by many deep inlets which form safe and commodious harbours. The west coast is generally bold, rocky, and in places mountainous.

Climate. The climate of England may be described as *oceanic*. The moist south-west winds from the ocean temper the climate, making the winters mild and the summers cool for the latitude. The annual range of temperature is small, varying not more than 20 degrees between mean summer and mean winter temperatures over the larger part of the country.

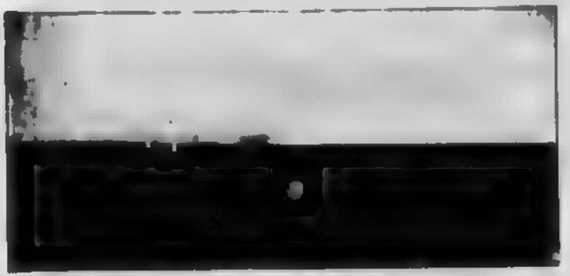
The distribution of the abundant rainfall depends upon the winds and the position of the highlands. The western coast is rainy and the eastern is dry. At London the annual rainfall is about twenty-five inches.

The easterly winds are cold in winter, since they blow from the cold continent of Europe; but the mountain ranges, like the Pennines, running through the centre of the country, protect the region to the west. This accounts in part for the warmth of the winter climate about Manchester.

Products of the Soil. The warm, moist climate, and the fertile soil make the plains and valleys of England an exceptionally fine farming country and the hills and more rugged slopes furnish pasturage for cattle and sheep. Wheat, oats, barley and rye are the grains most extensively grown. Large quantities of garden vegetables are produced in Wales and in the vicinity of all the large towns. Hops for the local breweries are cultivated in the south of England. Cattle are extensively raised for beef, butter, milk, and cheese, which find a ready market in the principal cities. Nevertheless, owing to the multitudes engaged in factories, mines, etc., the country produces far less food than is needed by its inhabitants.


ENGLAND AND WALES.
Liverpool
Bristol
Plymouth
BRITISH ISLES.
ATLANTIC OCEAN
NORTH SEA
SCOTLAND
IRELAND
ENGLAND
IRELAND
ISLE OF MAN
IRISH SEA
NORTH SEA
WALES
ENGLAND
Cardigan Bay
Bristol Channel
ENGLISH CHANNEL
FRANCE
Newcastle
Sunderland
Hull
Manchester
Birmingham
Nottingham
Leicester
Norwich
London
Croydon
Brighton
Portsmouth
Cardiff
Plymouth
The Wash
Longitude West from Greenwich

Mineral Products. Coal and iron are the principal minerals. These are found close to deposits of limestone, which is necessary for the smelting of the iron ore.



Looking over the English lowlands, called downs.

Coal is found principally in the valleys of the *Severn* and *Trent* rivers in Wales, and in the districts about *Newcastle* and *Manchester*. The coal-fields on or near the coast are centres of ship-building, while the interior coal-fields are centres of woollen and cotton manufacturing. Great quantities of coal are sent to other countries as ballast in vessels, which bring back the necessary food products and raw materials for manufacturing. Coal is the only raw product of England and Wales, which is produced in greater abundance than is needed for home use. It is sent principally to those countries on the continent of Europe which are lacking in fuel. Welsh smokeless coal is exported extensively for naval use.

Tin is found in England in valuable quantities; and slate, granite, salt, and pottery clay are common in certain districts.

Fisheries. The nearness of the British Isles to the great fishing grounds of the North Sea and of Iceland, combined with its deeply indented coast and large manufacturing population to be fed, has made fishing one of the great industries along its coast.

Hull, *Grimsby*, *Great Yarmouth*, and *Harwich* are the principal fishing centres in England, but all the coast towns contribute to this industry. The fishing vessels go far out into the Atlantic; many go even to the shores of Iceland, though the chief fishing grounds are over the Dogger-Bank in the North Sea. Haddock, herring, cod, and mackerel are the chief food-fishes which are taken.

Manufacturing. The British Isles are situated midway between the great land masses of the world. Raw products can be brought to them easily and cheaply by water and then shipped to other countries as manufactured products. Owing to the conditions of moisture and temperature and the excellent supply of coal and iron, the chief forms of this industry are the manufacture of cotton, woollen, and steel goods. More than 5,000,000 people are engaged in cotton and woollen manufacturing, chiefly in or about the large cities which have grown up near the coal and iron-fields.

North of a line drawn from the Dee to the Humber, there is the England of coal and iron, cotton and wool; of great mills and mines; and of industry on an immense scale — *the Black Country*. Here are *Manchester*, noted for its cottons, *Sheffield* for its cutlery and steel rails, *Leeds* for its woollens, and *Bradford* for its broadcloths and worsteds — places known the world over for manufactures and commerce. To the south of this line there is the *Midlands*, the region of smaller factories, having as its centre *Birmingham*, noted for its metal work, including firearms, machinery, tools, railway supplies, and jewelry. South of the Midlands is *feudal England*, the region of cathedral cities, market-towns, and residential boroughs.

Trade. Owing to its wealth of manufactures and to its situation, England has an enormous trade with all parts of the world. In fact, it carries on about one sixth of the total trade of the world. The larger part of this is centred at the ports of *London*, *Liverpool*, *Cardiff*, *Hull*, *Newcastle*, and *Southampton*. The coast and the interior trade also are very large, because the country is well supplied with railways, and the more important navigable rivers are connected by canals.

Imports. Nearly one half the imports into England come from the British colonies and the United States. Wheat, cattle, bacon, butter, cheese, fish, and forest products are imported from Canada. Cattle, hogs, cereals, and raw cotton are imported from the United States in large quantities. Cotton is also secured from India and Egypt, and wool is imported principally from Australia and South Africa. The imports from Australia and South America are very largely animal products.

Exports. England exports more manufactured goods than any other country, and nearly one half of the exports are cotton and woollen goods. Cotton goods are sent chiefly to the warm countries of the world, while woollen goods are sent to the cooler regions, like northern

North America, Australia, and the Argentine Republic. The principal exports to Canada are manufactures of iron and steel, cotton, wool, flax, silk, etc.

People. The people of England belong to the Teutonic race; those of Wales and Cornwall are of Celtic origin. They have always been noted for their respect for law, for their ability to adapt themselves to new conditions in new countries, and for their enterprise in developing commerce and manufactures. They have always been progressive and persevering in spite of difficulties. Hence, they have won where others have failed; and their colonies, planted widely and in regions rich in natural resources, have grown great and wealthy, and have become powerful and important members of the British Empire.

London, with its magnificent natural harbour afforded by the estuary of the Thames, is pre-eminently fitted to be the leading commercial city of the world. It is situated almost at the centre of the Land Hemisphere; to the east are the thickly populated nations of Europe, which cannot supply their own needs; to the west is America, with its abundance of raw material; behind it are the great manufacturing cities of England; and what is more, it is the greatest money-market of the whole commercial world, and is the capital of the richest and most powerful empire of modern times. All these advantages combined have made London the leading centre of trade, and the most populous city in the world. Its Houses of Parliament, Westminster Abbey, the Tower, St. Paul's Cathedral, its palaces, museums, art galleries, colleges, hospitals, parks, docks — these make London a city of intense interest to visitors. London carries on the larger part of the trade with the eastern countries, while *Liverpool* leads in the trade with Canada, the United States, and the West Indies. *Hull*, owing to its position, is an important port for commerce with the countries of northern Europe. *Cardiff* and *Newcastle*, owing to their nearness to the rich coal-fields, are the two leading coal-exporting cities of the world. *Canterbury*, *York*, *Winchester*, *Lincoln*, *Peterborough* are the seats of magnificent cathedrals, noble specimens of architecture.

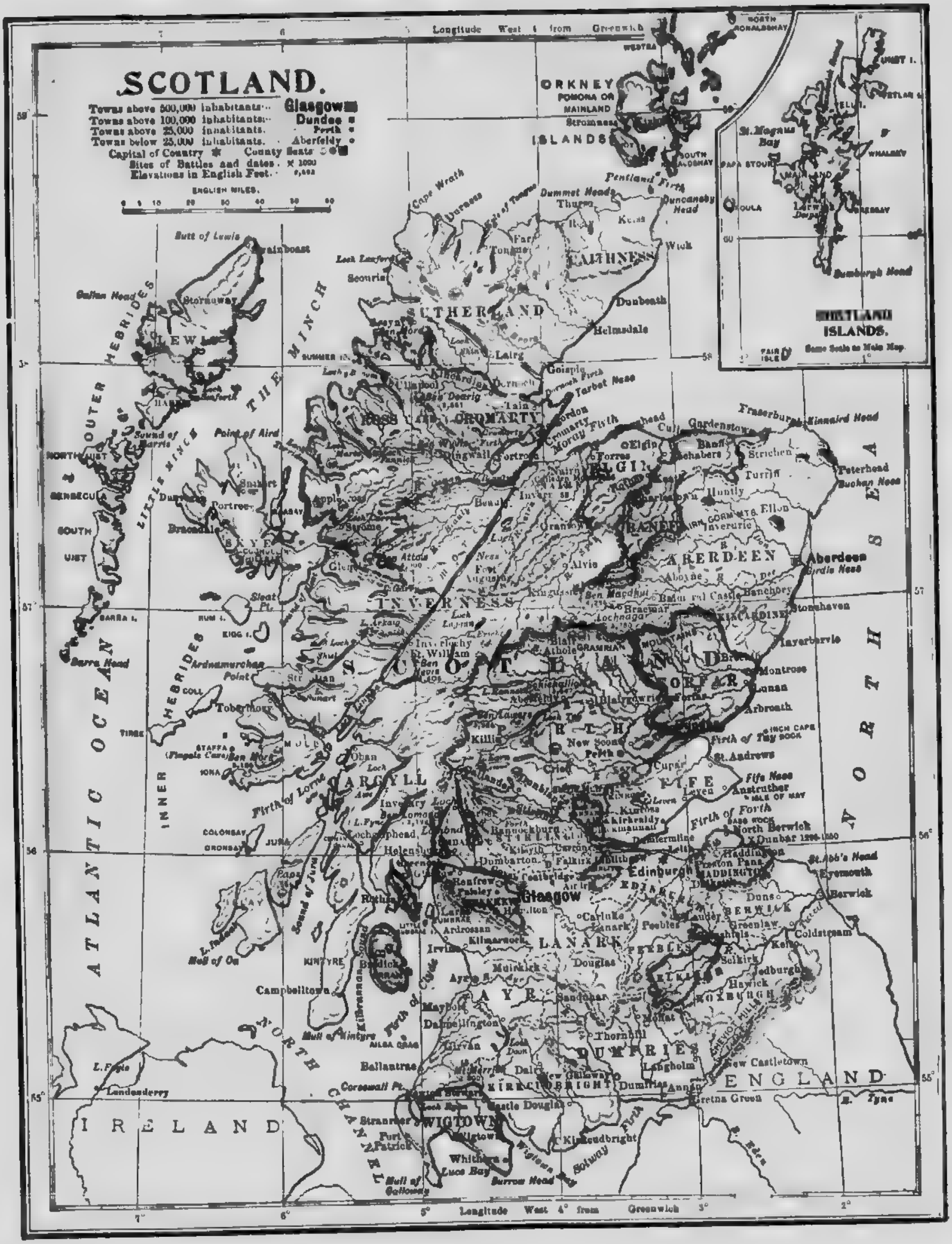
Oxford, England's oldest university, with its stately colleges, its castle and cathedral, is the home of classical learning, as *Cambridge* university is the centre of mathematical training. Manchester, Birmingham, and Liverpool, busy trade centres, are also seats of universities.

SCOTLAND

Surface and Drainage. Scotland consists of a southern upland region lying north of the Border, a lowland plain between the upland region at the south and the Highlands of the north, and a northern mountain mass forming the Highlands. A line drawn north-east from Dumbarton on the Clyde to Stonehaven on the North Sea marks the division between the Highlands and the Lowlands. The Grampian Mountains form the southern part of the Highlands. Ben Nevis (4,406 feet), one of the peaks of the range, is the highest mountain in the British Isles. In the intervening valleys between the mountain ranges are many lakes of rare beauty, such as *Loch Lomond*, *Loch Shiel*, and *Loch Maree*.

The water parting of Scotland is near the west coast,

Loch Lomond, Scotland. Notice the mountainous nature of the district.


SCOTLAND.
Towns above 500,000 inhabitants Glasgow
Towns above 100,000 inhabitants Dundee
Towns above 25,000 inhabitants Perth
Towns below 25,000 inhabitants Aberfeldy
Capital of Country ✱ County Seats
Sites of Battles and dates ✕ 1050
Elevations in English Feet
ENGLISH MILES.
0 5 10 20 30 40 50 60
Longitude West from Greenwich
SHETLAND ISLANDS.
Same Scale as Main Map.
North Ronaldsay
Westray
Unst I.
Yell
Fetlar I.
Whalsay
St. Magnus Bay
Papa Stour
Mainland
Lerwick
Foula
Bressay
Sumburgh Head
Fair Isle
ORKNEY ISLANDS
Pomona or Mainland
Stromness
Kirkwall
South Ronaldsay
Pentland Firth
Dunnet Head
Duncansby Head
Thurso
Wick
CAITHNESS
Dunbeath
Helmsdale
Cape Wrath
Durness
Kyle of Tongue
Tongue
Loch Laxford
Scourie
SUTHERLAND
Lairg
Golspie
Dornoch
Dornoch Firth
Tarbet Ness
Tain
Butt of Lewis
Stornoway
Gallan Head
LEWIS
HARRIS
OUTER HEBRIDES
THE MINCH
LITTLE MINCH
Summer Is.
Ullapool
ROSS AND CROMARTY
Cromarty
Moray Firth
Dingwall
Fortrose
Point of Aird
North Uist
Sound of Harris
Benbecula
South Uist
Barra I.
Barra Head
Snizort
Portree
Dunvegan
Bracadale
SKYE
Raasay
Applecross
Strome
Glenelg
Sleat Pt.
Rum I.
Eigg I.
Coll
Tiree
Ardnamurchan Point
Tobermory
Staffa (Fingals Cave)
Iona
Ben More
MULL
Oban
Firth of Lorne
ARGYLL
Inveraray
Lochgilphead
Colonsay
Oronsay
Jura
Sound of Jura
Islay
L. Indaal
Mull of Oa
Kintyre
Campbeltown
Mull of Kintyre
Arran
Brodick
Kilbrannan Sound
Firth of Clyde
Ailsa Crag
Bute
Rothesay
Little Cumbrae
Nairn
Forres
Elgin
ELGIN
Cullen
Banff
BANFF
Gardenstown
Fraserburgh
Kinnaird Head
Strichen
Turriff
Peterhead
Buchan Ness
Huntly
Ellon
Inverurie
ABERDEEN
Aberdeen
Girdle Ness
Aboyne
Balmoral Castle
Banchory
Braemar
Lochnagar
Ben Macdhui
KINCARDINE
Stonehaven
Inverbervie
Montrose
FORFAR
Lunan
Arbroath
Inch Cape Rock
Firth of Tay
Dundee
St. Andrews
Cupar
FIFE
Fife Ness
Anstruther
Isle of May
Leven
Kirkcaldy
Kinross
Dunfermline
Firth of Forth
Bass Rock
North Berwick
Dunbar 1296-1650
Haddington
HADDINGTON
Preston Pans
St. Abb's Head
Eyemouth
Berwick
Inverness
Beauly
Loch Ness
Fort Augustus
Grantown
Alvie
Kingussie
INVERNESS
Loch Arkaig
Loch Laggan
Invergarry
Fort William
Ben Nevis
Blair Atholl
GRAMPIAN MOUNTAINS
SCOTLAND
Strontian
Loch Shiel
Loch Rannoch
Schiehallion
Aberfeldy
Ben Lawers
Loch Tay
Killin
PERTH
New Scone
Perth
Crieff
Callander
Dunblane
Bannockburn
Stirling
Kilsyth
Falkirk
Linlithgow
Leith
Edinburgh
EDINBURGH
Dalkeith
Loch Lomond
Ben Lomond
Helensburgh
Dumbarton
Greenock
Renfrew
Paisley
Glasgow
Coatbridge
Airdrie
Hamilton
Largs
Ardrossan
Irvine
Kilmarnock
Ayr
AYR
Muirkirk
LANARK
Lanark
Carluke
Douglas
Sanquhar
Maybole
Dalmellington
Girvan
Loch Doon
Ballantrae
Dalry
New Galloway
KIRKCUDBRIGHT
Castle Douglas
Kirkcudbright
Corsewall Pt.
Loch Ryan
Stranraer
Port Patrick
WIGTOWN
Wigtown
Whithorn
Luce Bay
Mull of Galloway
Burrow Head
Wigtown Bay
Solway Firth
DUMFRIES
Dumfries
Thornhill
Moffat
Langholm
Annan
Gretna Green
Peebles
PEEBLES
Lauder
Duns
BERWICK
Greenlaw
Galashiels
SELKIRK
Selkirk
Coldstream
Kelso
Jedburgh
Hawick
ROXBURGH
CHEVIOT HILLS
New Castletown
ENGLAND
R. Tweed
R. Tyne
R. Eden
NORTH SEA
ATLANTIC OCEAN
INNER HEBRIDES
NORTH CHANNEL
IRELAND
L. Foyle
Londonderry
59°
58°
57°
56°
55°
60°
7°
6°
5°
4°
3°
2°
1°
Longitude West 4° from Greenwich

so the rivers flowing east, such as the *Tweed*, *Forth*, and *Tay*, are much larger than those flowing westward. The Clyde, however, is the first commercial river of Scotland, and it is, moreover, the greatest ship-building river in the world.

Coast Features. The coast of Scotland is so indented by arms of the sea that no part of the country is more than 40 miles from sea-water.

On the east coast the land declines gradually to the beach or to the bordering cliffs, and the shores are generally low and cultivated to the tidal line. In the west, the coast is bold and picturesque and presents a succession of projecting headlands, deep inlets, and long peninsulas.

Climate, Soil and Productions. The western part of the country has a greater rainfall than the eastern, and the winter temperature is also somewhat higher. The reverse is the case in summer.

The soil of the central lowlands is very fertile and is in a very excellent state of cultivation. It produces fine crops of oats, barley, wheat, potatoes, and turnips. The Highlands are famous for raising cattle, and the southern uplands for sheep.

Princes Street, Edinburgh. Notice the Castle on the left and the monument to Sir Walter Scott in the centre.

Industries. The chief industries of Scotland are connected with mining, manufactures, and commerce. The central lowlands are remarkably rich in coal and iron, and so the chief manufacturing centres are also in this region. Woollens are produced chiefly in the valley of the Tweed at *Galashiels* and *Hawick*; cottons at *Glasgow* and *Paisley*; linen and jute at *Dundee*.

In the Highlands, the fisheries are an important industry, the centre being at *Aberdeen*.

The commerce of Scotland resembles that of England. The imports are raw material for manufacture, and food stuffs. The exports are chiefly manufactured goods.

People. The people of the Highlands are of Celtic origin, and a considerable number still speak the Gaelic language. The Lowland Scotch are mainly descendants of Scandinavian ancestors, and speak a language of Teutonic origin which, therefore, resembles the English language. They are an intensely patriotic people, industrious, thrifty, and noted for their zeal in matters of education and religion.

Cities. *Edinburgh*, the capital, is one of the most picturesque cities of the world. It is the leading educational centre of Scotland and the seat of one of the four universities of the country. There are many objects of historical interest, such as Holyrood Palace, the former residence of the Scottish kings, monuments to Scott and Burns, the Castle, etc. Near the city is the immense Forth Bridge.

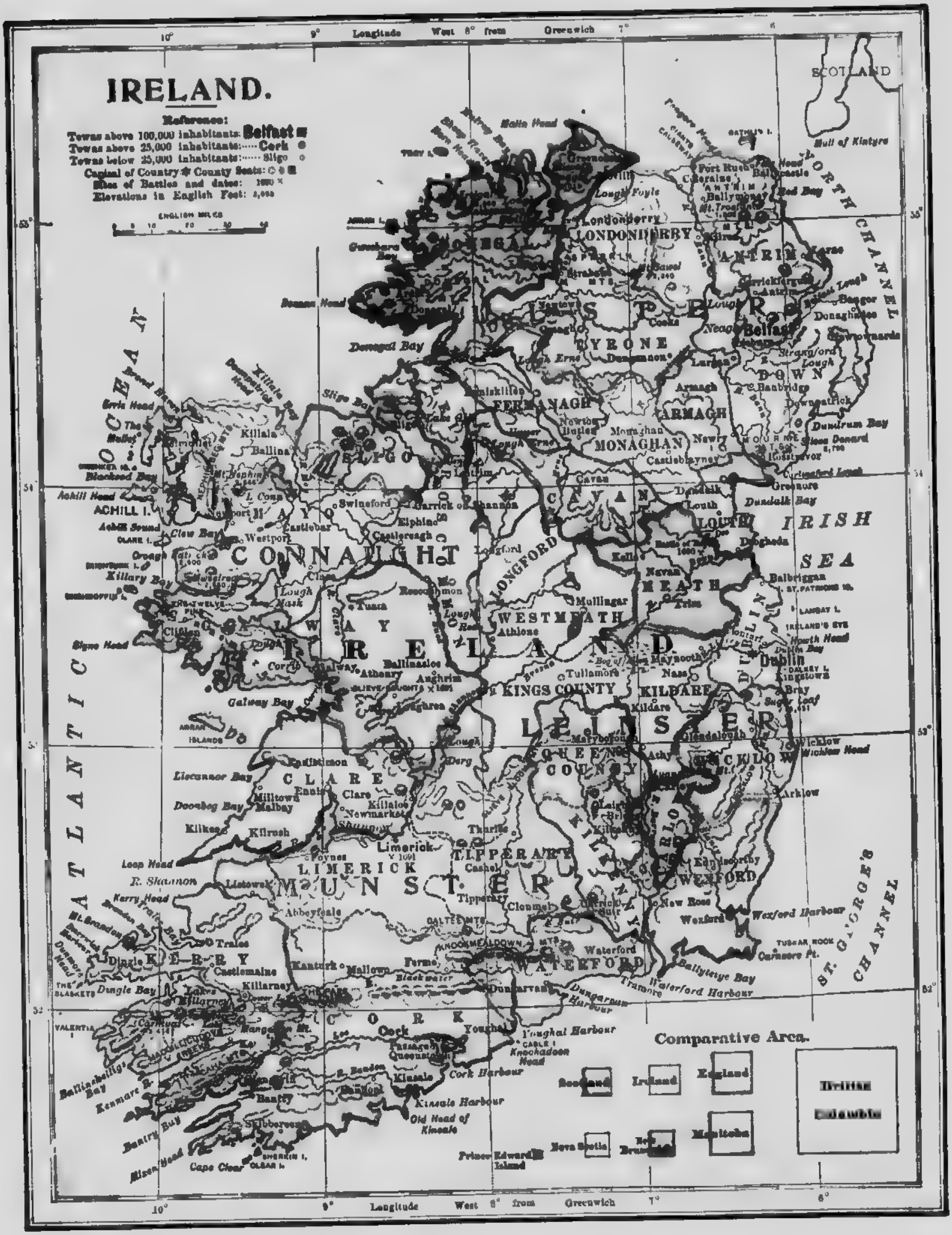
Glasgow, situated on the Clyde, is the second city in the United Kingdom and the greatest ship-building centre in the world. Its remarkable growth is due to its fine harbour, formed by dredging the Clyde; to its nearness to rich mines of coal and iron ore; and to the development of trade with the two Americas. It is the seat of a university dating from 1450.

Aberdeen, the "Granite City," has extensive fisheries and manufactures cotton and linen goods. It is the seat of a university founded in 1494.

Dundee is a flourishing seaport. It imports flax from Russia, and jute from India, and exports linen, jute, and hemp goods.

IRELAND

Surface and Drainage. Ireland consists of an interior plain seldom more than 300 feet above the sea-level. Surrounding this plain, which abounds in small lakes and bogs, are hills and low mountains lying chiefly near the coast. The mountains



IRELAND.
Reference:
Towns above 100,000 inhabitants: Belfast
Towns above 25,000 inhabitants: Cork
Towns below 25,000 inhabitants: Sligo
Capital of Country, County Seats
Sites of Battles and dates: 1690 ×
Elevations in English Feet
ENGLISH MILES
Longitude West 8° from Greenwich
10° 9° 8° 7° 6°
55° 54° 53° 52°
SCOTLAND
Mull of Kintyre
NORTH CHANNEL
IRISH SEA
ST. GEORGE'S CHANNEL
ATLANTIC OCEAN
ULSTER
CONNAUGHT
LEINSTER
MUNSTER
IRELAND
DONEGAL
LONDONDERRY
ANTRIM
TYRONE
FERMANAGH
ARMAGH
DOWN
MONAGHAN
CAVAN
LOUTH
MEATH
DUBLIN
WESTMEATH
LONGFORD
SLIGO
MAYO
GALWAY
ROSCOMMON
KINGS COUNTY
KILDARE
QUEENS COUNTY
WICKLOW
CARLOW
KILKENNY
WEXFORD
CLARE
LIMERICK
TIPPERARY
WATERFORD
KERRY
CORK
Malin Head
Lough Foyle
Londonderry
Coleraine
Ballymoney
Ballycastle
Fair Head
Red Bay
Larne
Carrickfergus
Belfast Lough
Belfast
Bangor
Donaghadee
Newtownards
Strangford Lough
Downpatrick
Dundrum Bay
Banbridge
Newry
Lough Neagh
Dungannon
Cookstown
Omagh
Enniskillen
Lough Erne
Lurgan
Armagh
Monaghan
Castleblayney
Cavan
Dundalk
Dundalk Bay
Carlingford Lough
Greenore
Drogheda
Navan
Kells
Trim
Balbriggan
Mullingar
Athlone
Tullamore
Maynooth
Naas
Kildare
Dublin
Dublin Bay
Howth Head
Kingstown
Bray
Sugar Loaf
Wicklow
Wicklow Head
Arklow
Enniscorthy
New Ross
Wexford
Wexford Harbour
Carnsore Pt.
Tuskar Rock
Waterford
Waterford Harbour
Tramore
Dungarvan
Dungarvan Harbour
Youghal
Youghal Harbour
Cork
Queenstown
Cork Harbour
Kinsale
Kinsale Harbour
Old Head of Kinsale
Bandon
Bantry
Bantry Bay
Skibbereen
Cape Clear
Mizen Head
Kenmare R.
Ballinskelligs Bay
Valentia
Killarney
Dingle Bay
Dingle
Tralee
Castlemaine
Kerry Head
Loop Head
R. Shannon
Listowel
Abbeyfeale
Kilrush
Kilkee
Milltown Malbay
Doonbeg Bay
Liscannor Bay
Ennistimon
Ennis
Killaloe
Newmarket
Limerick
Tipperary
Cashel
Thurles
Clonmel
Carrick on Suir
Galtee Mts.
Knockmealdown Mts.
Kanturk
Mallow
Fermoy
Blackwater
Galway
Galway Bay
Aran Islands
Clifden
Slyne Head
Killary Bay
Clew Bay
Westport
Castlebar
Achill I.
Achill Head
Achill Sound
Blacksod Bay
Erris Head
Killala
Ballina
Swineford
Sligo
Sligo Bay
Donegal Bay
Donegal
Carrick on Shannon
Elphin
Castlerea
Roscommon
Longford
Tuam
Athenry
Ballinasloe
Aughrim
Loughrea
Lough Derg
Lough Corrib
Lough Mask
Lough Ree
Bog of Allen
Maryborough
Athy
Kilkenny
Carlow
Comparative Area.
Scotland
Ireland
England
British Columbia
Nova Scotia
New Brunswick
Manitoba
Prince Edward Island

abound in wild ravines, bold cascades, and beautiful lakes, like those of Killarney, which yearly attract many visitors by their great natural beauties. The bogs furnish an abundance of peat fuel or turf, as it is called. The chief rivers of Ireland are the *Shannon* in the west, and the *Liffey* and *Boyne* in the east. The Shannon is the largest river in the United Kingdom. After a course of 225 miles it enters the Atlantic Ocean by an estuary ten miles wide and sixty miles long.

Coast Features. The north coast is bold and rocky. The east coast is generally flat, sandy, and regular, and there are many sandbanks and sunken rocks which obstruct navigation. On the south coast are several fine harbours, as those of *Cork* and *Waterford*. The west coast is high, rocky and, from being exposed to the full force of the Atlantic, is much broken and very irregular.

Climate, Soil, and Productions. The climate of Ireland is more equable than that of England or Scotland. The mean temperature seldom falls below 40 degrees in the winter. The rainfall is very uniformly distributed and averages about 40 inches a year.

Interior of a cottage in Ireland. The grate burns peat.

The soil is in general fertile, and agriculture in its various branches is the chief occupation of the people. Oats, barley, and potatoes are extensively grown. Flax is an important crop in the north, where it is made into the famous Irish linen at such centres as *Belfast*, *Newry*, and *Londonderry*. Bacon, butter, and eggs are exported. Great numbers of sheep, cattle, and horses are raised on the rich pasture lands for the English market.

Divisions. Ireland is divided into four provinces, and these are subdivided into thirty-two counties.—Ulster in the north, Leinster in the east, Munster in the south, and Connaught in the west. At one time these provinces with Meath formed separate Irish kingdoms; but now they serve only for geographical boundaries.

People. The Irish people consist of descendants of the original Celtic stock, to which have been added the Saxon, Scottish, and English immigrants of later days. In the reign of James I. the north was colonized by English and Scottish settlers and since that time the people of the north have been largely Protestants in religion, while in the south and west they are mainly Roman Catholics.

Cities. *Dublin*, the capital, is situated on the Liffey. The Castle, dating from 1223, is the administrative centre and the official residence of the Lord-Lieutenant, the king's representative in Ireland. The University of Dublin, commonly known as Trinity College, is one of the great educational institutions of the United Kingdom.

Belfast is the largest industrial city in Ireland. It is on the edge of a flax-growing district, and on a good harbour opening toward Great Britain. All branches of the Irish linen industry centre here. One of its great industries is ship-building. It is the seat of a university.

Cork, situated on the River Lee, has one of the finest harbours in the world. It exports cattle and provisions, and manufactures woollen goods. Its most famous building is St. Anne's Shandon Church, noted for its beautiful chimes.

Limerick, on the Shannon, is the market and port of a fine farming country. It manufactures lace and gloves, and exports bacon, butter, and eggs.

Londonderry, on the west bank of the River Foyle, is noted for its walls, Cathedral, and its siege in 1689. It manufactures linen, and exports farm produce.

LXVII. FRANCE

Position and Coast-Line. The republic of France lies on the windward side of Europe, and is separated from the United Kingdom by the narrow *Strait of Dover* and the *English Channel*. Surrounded by water on three sides, it has a long coast-line, yet it has few good harbours, owing to the coast being very regular in form.

The great indentations, the *Bay of Biscay* and the *Gulf of Lions* are both stormy, hence commerce along these coasts is carried on at a great disadvantage. The best harbours are *Le Havre*, important for its trade with America; *Calais*, the port nearest the United Kingdom; *Bordeaux*, which has a large trade with South America; and the leading port, *Marseilles*, which trades chiefly with Africa and the rich countries of the East Indies.

Surface. Northern and north-western France lie in the great low plain of northern Europe. The general trend of the slopes is to the west and north-west, and hence the longer rivers run in these directions.

The beautiful boulevard of Paris from the Arc de Triomphe.

The larger part of central France is a plateau, which rises from the valley of the Rhone in the steep, wall-like front known as the *Cevennes*. The plateau slopes down from this rim to the western coastal lowland.

On the east are the *Jura Mountains* and the beginning of the great highland of the *Alps*, which extends close to the sea east of Marseilles. At the north end of the French Alps is the highest peak in Europe, *Mont Blanc*, 15,775 feet in height.

Rivers. The great rivers flow to the west, or are confined, as is the case with the *Rhone*, to narrow valleys between the mountain ranges. Owing to the fact that all the great rivers of France — the *Rhone*, the *Seine*, the *Loire*, and the western tributaries of the *Rhine* — have their sources near one another on the central plateau, it was very easy to connect the upper courses of these rivers by canals, and thus form a net-work of water-ways crossing the country in every direction. These canals promote the interior trade of France.

Climate and Rainfall. Owing to the nearness of France to the sea, and to the protection afforded by the mountain barrier on the east, its climate is very even. The climate of the mountains and the plateau is, of course, more severe than that of the protected plains to the west and north, and the rainfall is unequally distributed. The greatest annual rainfall is along the north side of the Pyrenees, where it is about the same as at Halifax. The least is along the Mediterranean coast, where it is about the same as in Manitoba.

The southern coast east of Marseilles, being protected from the cold northern winds, has become a great winter resort, known as the *Riviera*.

Products of the Soil. France is distinctly an agricultural country, and nearly one half its people live on farms.

In the damp, warm areas of the lower Rhone and along the southern coasts, the olive is extensively cultivated. Mulberry trees, on the leaves of which silk-worms feed, also flourish; hence the production of silk is an important and thriving industry in the south-eastern part of France.

Wheat, which occupies one sixth of the cultivated land, is the most valuable cereal, especially in the basins of the Loire and the Seine. Oats is the second cereal in importance. Rye and barley are raised on the poorer

Making Roquefort cheese in limestone caves.

soils of the coast and in the highlands. On the plains of the north, where the slopes and soil are favourable, potatoes and sugar-beets are raised in large quantities, especially for making alcohol and raw sugar.

The warm, sunny climate and fertile soil of France combine to make it the greatest grape-raising and wine-producing country in the world. Grapes do not flourish in the north, but from the Loire southward the vineyards occupy every favourable nook on the warmest and best protected slopes, and give the region an appearance of thrift and beauty. Wine is second only to silk as an export.

Lyons, the leading silk market of the world.

Stock-Raising. Cattle-raising is extensively carried on, especially among the hills of the north-west. This part of the country produces a large amount of butter, which is for the most part sold in Paris and London. In Normandy, in the northern part of France, and also in southern France, a great quantity of cheese is made.

Minerals. The principal minerals of France are coal, iron, and salt. These are not widely scattered, however, and for this reason the industries which depend upon them are centred about a few regions only. The principal coal and iron deposits are along the Belgian frontier, and in the eastern highlands. Near these regions are found the great manufacturing towns of *Lyons*, *St. Étienne*, and *Lille*. Salt is found along the western coast from the Garonne to the Loire, and about *Nancy*.

Fishing. France carries on an extensive fishing industry, and consumes a great quantity of the product. The fish caught are largely cod from the Atlantic, and from the neighbourhood of Newfoundland, where certain small islands owned by France also serve as the base for the fisheries. Oysters are found in the Bay of Biscay and in the English Channel. Sardines are found along the northern and western coasts, and are canned and sent to all parts of the world.

Manufacturing. France ranks fourth among the manufacturing countries of the world; it is surpassed by the United States, the United Kingdom, and Germany, all three of which have richer deposits of coal and iron, and better opportunities for carrying on ocean commerce. France excels, however, in the quality of its products. Iron and steel-working are the principal occupations at *St. Étienne*, near the eastern coal-field. *Marseilles* and *Bordeaux* produce steel; their product is made largely from iron imported from Spain, where rich iron ore is found in great quantities. *Paris* is a manufacturing centre for jewelry, gloves, and other goods of a similar nature. Silks are woven in great quantities about *St. Étienne* and in the vicinity of *Lyons*, which is the world's greatest silk market. The proximity of mulberry groves and coal deposits, and the fact that the water from the mountain streams is especially good for dyeing, contribute greatly to the success of the industry. The French have a natural taste and skill in the manufacture of jewelry, gloves, artificial flowers, and various articles of finery. These are extensively produced, especially at Paris.

Foreign Trade. The largest exports are textiles, small goods of artistic value, and wine. The largest imports are food products, and raw materials for manufacturing, including coal from the United Kingdom, lumber from Sweden and Norway, wool from Argentina and Australia, and cotton, petroleum, meats, and cereals from the United States. *Le Havre*, the great cotton port, receives its cotton direct from the southern ports of the United States.

People. The French are a mixed race, composed of Celts and Iberians, but these original elements were much modified by successive invasions of Romans, Franks, and Northmen. The Celtic dialect is now spoken only in a part of Brittany. Since the overthrow of Napoleon III by the Germans, France has been a Republic. It is now divided into eighty-seven departments; these are divided and sub-divided and are ruled over, under the government, by prefects, sub-prefects and mayors respectively. The executive power is vested in the President and the legislative in the Senate and Chamber of Deputies. The President is elected by the two Houses combined in what is termed the National Assembly.

In the large cities of France, and especially in Paris, the people are exceptionally refined and are fond of excitement especially in political affairs. In the rural districts the thrifty farmers are more contented with their lot and less easily excited. Women often share the outdoor work with the men.

The Escurial near Madrid, a famous building of Spain.

Scenery. France is especially noted for the beauty of its cities. *Paris*, the capital, is one of the most beautiful and interesting of cities, and is annually visited by many tourists. The natural aptitude of the French people for art, and their magnificent art galleries, the most noted of which is the *Louvre*, have made Paris the art centre of the world. It is the seat of the University of Paris, and the home of medical schools, conservatories of music and applied science. Its museum of natural history is among the finest in the world.

France has many foreign possessions; the most important are *Algeria*, the *Sahara*, *French Western Africa*, *Madagascar*, and *French Indo-China*. Most of these possessions furnish many valuable products to the home country.

MONACO AND ANDORRA

Position and People. In south-eastern France, just east of Nice, is the independent principality of *Monaco*. It is in the most favoured portion of the Riviera, and is visited by many tourists. Its revenues are derived from the gambling tables of *Monte Carlo*, situated close by Monaco, its capital.

High up among the Pyrenees lies the little republic of *Andorra*. It is inhabited by a sturdy race of peasants who have maintained their independence for centuries.

LXVIII. THE IBERIAN PENINSULA

SPAIN AND PORTUGAL

Size and Boundaries. The Iberian Peninsula, which is about the size of the land portion of Ontario, contains two countries, *Spain*, a limited monarchy, and *Portugal*, a republic. It is separated on the north from France by the high barrier of the Pyrenees. As these mountains have few passes, land communication with France is difficult.

Surface and Drainage. Three fourths of the area of the Iberian Peninsula is a great plateau averaging about twenty-five hundred feet in height. This plateau is broken by numerous ridges of nearly parallel mountains, known as *sierras*.

Owing to the form of the land and to the youthful character of the streams, the rivers are interrupted by numerous rapids and shallows, and are not navigable for any great distance. The *Guadalquivir* is the most important exception; vessels can ascend it to *Seville*.

Climate. The climate of the Iberian Peninsula is characterized by very marked difference between summer and winter. In winter the region lies in the path of the westerly winds, but in summer it is occupied partly by the horse-latitudes and partly by the north-east trade-winds. Therefore the winters are moist and the summers extremely dry.

Owing to the dryness of the summer climate, agriculture can be carried on in most places only by means of irrigation. This has been practised for centuries, and large areas have been changed from deserts into fertile, garden-like areas.

Products of the Soil. About one fourth of the people of Spain and Portugal are engaged in agriculture, which is very profitable where irrigation is practised. The interior is so dry that even grass is scanty, but sheep are raised in very large numbers. In the north-west wheat and barley are grown for home use.

In the irrigated lands, fruits, sugar-cane, olives, cork-oak, and the vine are produced in abundance. Wine is the leading product, especially in the valleys of Portugal.

Minerals. The mineral products of the Iberian Peninsula are extremely valuable. The iron of the north is very rich and pure. Coal is generally distributed, but little is mined. Spain has remarkably rich deposits of quicksilver, copper, lead and silver. In the north, machinery is manufactured.

Trade. Owing to the lack of railways and navigable rivers, the internal commerce of Spain and Portugal is small. Wine forms a large part of the exports, and is sent chiefly to France and the United Kingdom. Oranges, lemons, olives, and cork are also important exports. The greatest trade is with the United Kingdom and France.

The Alhambra, a great stronghold and palace at Granada, Spain.

The chief imports are cotton from the United States, wheat from Russia, timber from Sweden, and woollens from France.

Madrid, the capital of Spain, with over three quarters of a million population, has a magnificent royal palace, and one of the finest art galleries in the world, but the surrounding country is an arid waste.

In *Barcelona*, the chief port of Spain, textiles are manufactured; *Valencia* exports silks and oranges; *Malaga*, grapes and wines. *Oporto* is the chief outlet for the foreign trade of Portugal, and gives its name to port wine, a leading article of export. *Lisbon*, the capital of Portugal, is situated on one of the finest natural harbours in the world.

The mode of street travel in the Madeira Islands.

People. The Portuguese have always been active in maritime affairs, carrying on commerce with the distant parts of the world. The Spaniards, on the other hand, were not content with trade, but endeavoured to subjugate all the new countries possible, so that they could own vast riches of gold and silver. Spain was at one time a great colonizing nation, but through mismanagement her colonies have gradually been lost. Education has been neglected and the majority of the people are unable to read.

Possessions. Portugal has large possessions in Africa, including *Angola* and *Portuguese East Africa*; it holds some islands in the Pacific, and the *Azores*, the *Cape Verde*, and the *Madeira* islands, in the Atlantic. Spain possesses the *Balearic Islands*, the *Canaries*, a few islands off the coast of Africa, and a narrow strip of the Saharan coast.

GIBRALTAR

Position. On the very southern point of Spain, where it approaches nearest Africa, is the small peninsula known as *Gibraltar*. This is heavily fortified, and belongs to the United Kingdom. As the Strait of Gibraltar is only eight miles wide, the United Kingdom, through this fortress, really controls the entrance to the Mediterranean, its guns commanding nearly the whole strait.

LXIX. BELGIUM, THE NETHERLANDS (HOLLAND), AND DENMARK

Position and Coast-Line. *Belgium*, the *Netherlands*, and *Denmark* are small but important Kingdoms bordering on the Atlantic.

Along a canal, Amsterdam. Much of the city's transportation is by water.

Belgium, one of the most densely populated regions in the world, has about forty miles of unbroken coast, with no harbour except the small one of *Ostend*, which is connected by steamship lines with *Dover* and *Harwich*, England. Its chief port is *Antwerp* on the Scheldt, access to which is controlled by the Netherlands.

In the Netherlands are two excellent harbours: *Amsterdam*, which is connected with the North Sea by a ship-canal, and *Rotterdam*.

Denmark is made up of several large islands and a peninsula.

Surface. These three countries are all low, and the coasts are largely sand dunes, which form good watering-places, especially in Belgium. Almost all of the coastal portion of the Netherlands is below the level of the sea, and the water is kept from advancing upon the land only by high dikes, which are built as a protection against the waves. Denmark is very flat, sandy, and contains many marshes and lakes. In the peninsula of *Jutland* many of the lakes have become peat-bogs.

Drainage. The rivers of the Netherlands and Belgium rise farther inland and flow through these countries to the sea. In the Netherlands the land is so low and flat, and the divides are so inconspicuous, that a vast net-work of canals has been built to connect the rivers. The products of the farms are brought to market by means of the canals, and sold directly from the boats. In winter, when the canals are frozen, the people travel to market on skates.

Climate. Belgium, the Netherlands, and Denmark all lie in the belt of the westerly winds throughout the year. Hence, the climate is equable and damp. More than one half of the days in Belgium are cloudy, and it rains in the Netherlands on an average of 204 days in the year.

The winds, not being impeded by any irregularities of the surface, windmills are very generally used.

In Denmark the climate is like that of eastern Scotland, but the winters are not sufficiently severe to close the harbours with ice for any length of time, though drifting ice is common for many months. The dampness here favours the formation of peat.

Peddling milk in dog-carts in Belgium. The inspector is making a note.

Products of the Soil. Owing to the fertile soil, and moist, equable climate, the primary industries in these countries are agriculture and dairying. Danish butter is so good as to stand first in the English market. The chief crops raised in Denmark are oats and sugar-beets; in the Netherlands, rye, oats, potatoes, and sugar-beets; in Belgium, cereals, flax, hemp, and sugar-beets.

In the dike-protected districts of the Netherlands.

Minerals. In the Netherlands a pottery clay is found at *Delft*, which gives its name to a kind of fine china. Belgium produces great quantities of coal and iron.

Fishing. Fishing in the Netherlands is important, especially that carried on in the North Sea and about Iceland. The principal fish is the herring, which is packed for export. Oysters are produced in abundance; the best are kept for local use.

Manufacturing. In Denmark and the Netherlands there is little coal and iron, and manufacturing is, therefore, relatively unimportant. Belgium, because of its mineral wealth of coal and iron in the south, is a very important manufacturing country.

Brussels, the capital of Belgium, and the largest city, is noted for its lace and carpets, picture-galleries, museums, and schools. *Liège* manufactures iron and steel goods, fire-arms, machinery, and tools. *Ghent* is especially noted for its linens and cottons.

Trade. The trade of Belgium, the Netherlands, and Denmark is large. Canals and railways cover Belgium, and the Meuse is navigable to the German boundary; hence, interior trade is easily carried on.

The trade of Belgium centres largely at *Antwerp*, which receives and exports the larger part of the world's ivory. The chief exports are iron and steel, coal, guns, flax, and glassware; the imports are cereals, wool, lumber, and petroleum.

In the Netherlands the chief trade is with the colonies. Many of the goods brought from these colonies are again exported, including coffee, spices, gums, indigo, dye-woods, diamonds, leaf-tobacco, and other goods of a similar nature. Butter, meat, and cheese are sent to England and Germany; cotton goods, to the colonies. *Amsterdam* is noted for its university, museums, shipping, and diamond cutting. It is the constitutional capital, but *The Hague* is the seat of government. *Rotterdam* is one of the great seaports.

In Denmark, *Copenhagen*, the capital, is the great distributing port for the Baltic countries, and the larger part of its trade is with them. Coal, textiles, food products, and machinery are imported; butter, eggs, and meat are exported in large quantities.

Foreign Possessions. The foreign possessions of the Netherlands are very important, because, lying in the tropics, they furnish tropical products of great value to the people of northern Europe. These possessions include *Java* and other islands in the East Indies, and *Dutch*

Antwerp, the great ivory market of the world.

Guiana in South America. Denmark owns three small islands in the West Indies and the large islands of *Greenland* and *Iceland*; the latter is valuable because of its fisheries. The King of Belgium controls the *Congo Independent State*, and hence Belgium trades in goods from tropical Central Africa.

People. The Danes are a rural people, simple in their habits, well educated, and particularly successful as mariners and explorers.

The people of the Netherlands are of many stocks, but they are united by a common written language, called Dutch, which is also the spoken language of the cultured classes.

The Belgians are more advanced in the arts and sciences than either the Danes or the Dutch. French is spoken in the south; Flemish, a language akin to Dutch, is spoken in the provinces bordering the Netherlands.

Copenhagen, the capital and great distributing centre of Denmark.

The colour conditions due to the climate and the vegetation make these countries, and especially the Netherlands, a favourite resort for artists. The quaint, rural people, with their characteristic costumes, their large flowing clothes, and wooden shoes, are also a great attraction.

ICELAND

Surface and Climate. Iceland, the largest island of Europe except Great Britain, belongs to the kingdom of Denmark. The interior is a desert plateau, for the most part covered with snow. The climate is wet and stormy, and agriculture is carried on with difficulty.

Products. Hay, cattle, and sheep are the leading products. Grass is secured with so great difficulty that it is planted even on the roofs of the houses, where its growth is aided by the warmth of the interior. The inhabitants are chiefly distributed along the coast, where they carry on a certain amount of fishing.

LXX. NORWAY AND SWEDEN

Position and Extent. The peninsula of Scandinavia includes the two kingdoms, *Norway* and *Sweden*. The peninsula extends far beyond the Arctic Circle, and over more degrees of latitude than any other division of Europe except Russia.

Coast-Line. The coast-line of Norway is very irregular; it abounds in magnificent fiords, affording fine harbours famous for their scenery. Off the coast are a great number of islands, forming a kind of barrier

A Norwegian fiord.

which protects coasting vessels in their voyages along the inside channel. These islands are surrounded by shoals which abound in fish. Because of these favourable conditions, the inhabitants of Norway have long been a seafaring people. The eastern coast of Sweden contains many harbours, but the climate here being severe, many of these are ice-locked for several months in the year.

The City of Stockholm, Sweden.

Surface and Drainage. Norway, one of the most mountainous countries of Europe, occupies the short, steep, western slope of the Kjölen range. Sweden, sloping east, is mainly a great plain, heavily glaciated and dotted with numerous lakes. The streams flowing west are shorter and swifter than those in the east.

Climate. The peninsula is swept by the westerly winds, which bring to it the warmth and the moisture they have taken up in passing over the North Atlantic Drift.

There is, however, a great difference between the climate of Norway and Sweden, because Sweden is shut off from the mild westerly winds of the Atlantic by the north and south highland. The higher valleys of Norway have a severe and uncomfortable climate, and in consequence are little occupied; but the climate of the lower valleys and the sea-coast is tempered by the ocean breezes. On the western coast, the rainfall is as high as seventy-nine inches a year; it decreases to the east, in some places amounting to only thirteen inches.

Products of the Soil. Except in eastern Sweden, the amount of land in the peninsula suitable for farming is very limited, and as a result only a small proportion of the people are engaged in agriculture. More than one half of Sweden and one fourth of Norway are covered with forests, hence these are the most important timber-producing countries in Europe. On the higher slopes, which are not timbered, the abundance of moisture brings forth a supply of grass, which furnishes food for large numbers of cattle and sheep.

Mining. In both Norway and Sweden mining products are important, but on account of the great purity of Swedish iron, mining is better developed in that country. Copper, silver, and zinc are also obtained in Sweden, but there is very little coal. Silver, gold, and copper are mined in Norway.

Fishing. Owing to the limited agricultural opportunities in Norway, the people naturally turn to the sea for their food. Therefore, fishing, which is favoured by the splendid harbours and the proximity of the Atlantic fishing grounds, is the leading industry in Norway.

Manufacturing. By reason of the abundance of water-power furnished by the short streams from the mountains, manufacturing is increasing rapidly. Timber products, including wood pulp and matches, are the chief manufactures. Swedish matches are exported to all parts of the world. The

The Midnight Sun at Hammerfest.

manufacture of iron and steel, and of woollen and cotton goods is increasing.

Trade. Sweden is the largest lumber and timber exporting country in the world, and these products form about one half of the total exports. The principal foreign trade of these countries is with Great Britain.

Norwegian peasant women.

Stockholm, built on a number of islands connected by bridges, is the capital of Sweden, and the chief importing city, but is excelled in exports by *Gothenburg*.

The cities of Norway of commercial importance are *Christiania*, the capital, built at the end of a long and fine harbour; *Bergen*, the centre of the fish trade; and *Trondhjem*, the third town in size. All the large towns of both countries are near the sea; in Norway the larger number of people live on or near the coast.

People. The people of Norway and Sweden were for very nearly a century united under one government. In 1905, however, Norway withdrew from the union, and formed a separate kingdom, with a king of its own. The people are exceedingly industrious. The educated classes have produced many men prominent in science and literature, and the early poems and legends are of notable excellence and interest.

Scenery. Norway is visited every summer by large numbers of people who are attracted by its magnificent scenery. There are many wonderful glaciers and waterfalls, and the fiords are of great interest and beauty. The more northern towns, like *Hammerfest* and *Tromsö*, are much visited by people who wish to see the *midnight sun*.

LXXI. RUSSIA IN EUROPE

Size. Russia is the largest country of Europe. It occupies more than one half the continent, and is somewhat more than one half the size of Canada. It extends far beyond the Arctic Circle, and is really the western part of the great plain which occupies Siberia. The Russian Empire, which includes *Siberia*, *Turkestan*, and *Caucasia*, extends over one sixth of the land surface of the globe.

Coast-Line and Boundaries. Although Russia is bordered by the ocean or large seas in the north, west, and south, it has few good harbours, for the reason that a large part of its coast is icebound during several months of the year.

Surface. The only elevation of any note in the great plain of Russia is the Valdai Plateau, which rises to a height of 1,100 feet, and is the centre from which the drainage of the region radiates. Many long rivers flow down the gentle slopes toward the borders of the country, and, therefore, when not icebound, are of great commercial importance. The largest river, the *Volga*, is frozen for three months in the year. Many lakes dot the surface of north-western Russia, especially in Finland. *Lake Ladoga*, nearly

Looking down the broad valley of the Volga.

the same size as Lake Ontario, is the largest lake in Europe.

In south-eastern Russia there is a great area which is below sea-level. This region borders the Caspian Sea, whose surface is eighty-six feet below the Mediterranean. Many of the lakes of this section, therefore, have no outlet, and consequently are salt or brackish.

A Lapland Camp.

Climate. Russia lies in the eastern section of Europe, far from the tempering influence of the ocean, and is, therefore, characterized by extremely cold winters and short, hot summers. Approximately one half the area has a rainfall of less than twenty inches a year, but as this comes mainly during the growing season, agriculture can be carried on successfully in the central and southern portions.

Products of the Soil. In the north is the *tundra* area, mainly of use for pasturing reindeer. Here the *Lapps* and *Samoyedes* live a nomadic life, depending largely upon the chase for their support.

Extending south as far as a line running south-east from St. Petersburg, is the great forest region, composed largely of evergreen trees from which resin and timber are obtained. This is also the great fur-producing area of the country.

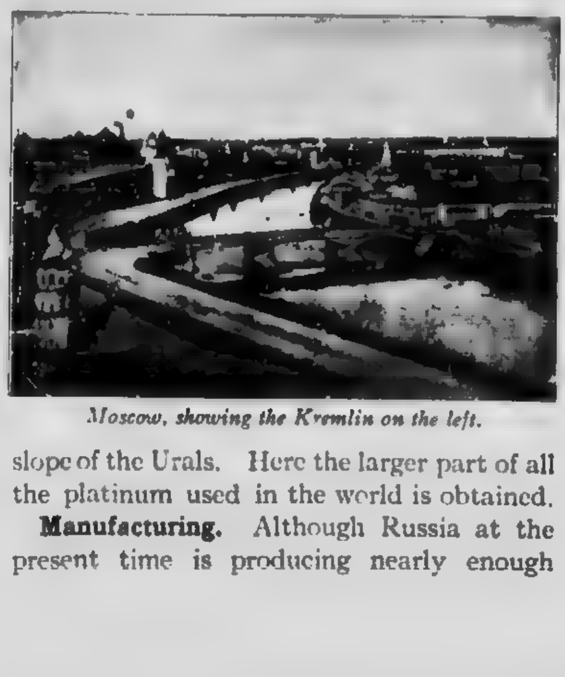
Central Russia, the richest part of the empire, is an agricultural and industrial region. This agricultural region includes the famous *black earth* district, an area of land of unsurpassed fertility, extending south to the parallel of 50 degrees north latitude. The rich, dark soil of this treeless region is well fitted for the growth of cereals, especially wheat and barley, which require abundant sunshine.

South and south-east are the arid *steppes*, great plains covered with grass, but too dry for agriculture. Here is a nomadic people, who raise great numbers of cattle, horses, and camels.

Russia raises more flax and hemp than any other country of the world, and produces nearly one half of the oats grown in Europe. It exceeds all European countries in the production of barley, surpasses all countries in rye, and ranks fourth in sugar. The rye is used for the most part at home, as the people live chiefly upon black rye bread.

Russia is one of the leading nations of Europe in the raising of cattle, sheep, horses, and hogs.

Mineral Products. Russia has large deposits of gold, coal, and iron; the latter two are mined chiefly in southern Russia and Poland. The most valuable mineral product is platinum, which comes from the eastern slope of the Urals. Here the larger part of all the platinum used in the world is obtained.



Moscow, showing the Kremlin on the left.

Manufacturing. Although Russia at the present time is producing nearly enough manufactured products for its own use, yet owing to the backward condition of the country, and to the fact that the mineral deposits are not so well developed as in the United Kingdom and Germany, manufacturing develops but slowly. The most progressive part of the country industrially is the west. *Lodz*, the Manchester of Poland, has extensive cotton and woollen manufactures.

Sebastopol, one of Russia's ports on the Black Sea.

Elsewhere most of the manufacturing is done in small shops or in the homes of the people. The chief products are textiles, leather goods, wood and metal goods, and pottery.

Moscow, with coal and timber near at hand, leads in manufactures, and is the chief railway centre. It was once the capital and is noted for its royal palace, churches, convents, and university. Its principal industries are wool and silk-weaving. *Warsaw*, on the Vistula, is the second inland city in industry and trade. Textiles are produced at *St. Petersburg* and in *Poland*. *Odessa* has flour-mills, sugar-refineries, and breweries.

Travel. There are few railways in Russia, and the larger portion of the trade of the country is carried on by water. In winter, when the rivers and canals are frozen, sledges are the chief means of transport. The building of the Trans-Siberian Railway is of great importance to Russia, for along its route, agriculture and manufacturing have been stimulated, and are growing in value. It is now possible to go with comfort and ease from St. Petersburg, the capital of the empire, to the Pacific coast in a little over two weeks.

Commerce. The chief exports of Russia are cereals and flour, timber, eggs, dairy products, and flax. Russia sends large quantities of wheat to the United Kingdom, and imports machinery from that country and Germany.

The Black Sea ports, of which *Odessa* and *Sebastopol* are the most important, are the chief outlets for the vast grain trade of southern Russia. *St. Petersburg*, the capital, owing to its position, is the greatest trade centre in the north; it exports grain and lumber. *Riga* exports rye, oats, and lumber. The trade of *Astrakhan* is chiefly in sturgeon and other fish secured from the Volga and the Caspian Sea.

Fairs. Before the development of canals and railways, the largest part of the trade of Russia was carried on at great annual fairs, which were held at *Nizhniy-Novgorod* and *Kharkov*. Although these fairs have declined in importance, they are still the scenes of active trading in goods from all parts of the world. People attend by thousands from all parts of the empire, and many million dollars' worth of trade results each year.

People. The people of Russia belong for the most part to the Sclav branch of the white race, though the population includes many Swedes, Finns, and Jews. The people are very heavily taxed for the maintenance of the government and the large standing army, and have little accumulated wealth. Determined efforts are being made to secure representative government. Little has been done to educate the masses.

Government. The Government is an absolute hereditary monarchy, the Czar being supreme in all departments. In 1905, however, a measure of constitutional government was adopted. The Czar is now assisted by various Councils; for example, the Council of the Empire, the Committee of Ministers, the Senate, the Duma, and the Holy Synod. Toward the end of the same year, representative government with a cabinet responsible to Parliament was nominally conceded.

LXXII. THE GERMAN EMPIRE

Size and Coast. The German Empire, or Germany, is the most central country of Europe. It consists of a *Federal Union* of the kingdoms of Prussia, Bavaria, Saxony, and Wurtemberg, and a number of Grand duchies, duchies, principalities, republics, and the Imperial Territory of Alsace-Lorraine. It is not so large as Ontario by about 50,000 square miles Besides the home country, the empire also includes large possessions in Africa, *German New Guinea*, and certain small islands in the Pacific.

Only one third of the boundary is sea-coast. This necessitates the maintenance of a large army for defensive purposes.

Surface. North Germany is a part of the great lowland of northern Europe; the south is a highland culminating in the Alps.

The northern plain, which is nowhere over 600 feet in height, is covered with sands and clays brought by the great ice sheet, and abounds in small glacial lakes.

The southern plateau is from 1,000 to 2,000 feet in altitude. In the extreme south, where it joins the Alps, it becomes higher, but at no point is it 10 000 feet above the sea-level. The higher lands of Germany include a portion of the Danube Basin, a rolling surface with an elevation of about 1,600 feet, which is covered with glacial deposits.

Drainage. The rivers of Germany all flow to the north, except the Danube, which is the most important commercial river of eastern Europe. The chief rivers of North Germany are the *Elbe* and the *Rhine*. The Rhine is navigable to Mannheim, and is connected by canals with the Rhone, the Seine, and the Danube. Canals also connect the Elbe with Berlin, and with Kiel. The Kiel canal is of great importance to shipping, because it has shortened by many miles the trade routes between the Baltic ports and the Atlantic Ocean. Other canals follow the valleys of some rivers which are too small for navigation.

Climate. Germany lies entirely within the westerly wind area. Therefore, the western portion has a climate which is tempered by the ocean. Toward the east, the winter climate becomes colder, because the continental conditions there more than counteract the influence of the ocean. The temperature of southern Germany is no higher on the average than that of northern Germany, because the advantage of position is offset by the increase in altitude.

Looking down the Upper Rhine valley.

The westerly winds give up their moisture as they blow over the land, so that the rainfall decreases from about forty inches in the western part of Germany to about twenty inches in the east.

Products of the Soil. About one half of the area of Germany is cultivated; one fourth is in forest, and the greater part of the remainder is used as pasturage. As a result, the agricultural products are very important.

Sugar-beets, raised largely throughout central Germany, are the chief crop, and Germany produces about one fifth of all the beet-sugar of the world. In the northern plain are vast fields of potatoes, in which crop Germany also leads the world. The infertile soil, and the absence of opportunity for manufacturing, make this, except in the Oder and the Vistula valleys, a thinly populated region. Where the soil is sufficiently fertile, cereals are grown. Rye is raised extensively, mainly for home use in bread making.

Farms and pastures in the forest region of Germany.

The best soil and the most favourable climate for agriculture are found along the Rhine, where grapes and tobacco are the chief crops. The other noteworthy crop of Germany is hops, grown especially in the higher areas of the southeast. The greater part of this crop is used in the extensive breweries of Munich.

In the hilly districts of central Germany are forests of beech, fir, spruce, pine, and oak, which supply wood for the famous toy factories of Nuremberg. Throughout Germany the forests are carefully conserved by regulations regarding the cutting and planting of trees.

Stock-Raising. Germany is second to Russia among the European countries in the raising of cattle. The breeding of horses and cattle is carried on extensively in the damper plains of the north; sheep are raised in the drier eastern section. Hogs are kept in large numbers on the farms in the sugar-beet area, where they live on the refuse from the sugar-factories. Large numbers are also raised in the hilly district of central Germany, where they feed on the nuts in the forests.

Mining. Germany is rich in coal and iron, and among European countries is second to the United Kingdom in the output of these minerals. It also has extensive mines of silver, copper, and salt, and yields the greater part of the world's zinc. Copper is found in the Erzgebirge and the mountains of the central part. Germany furnishes the best lithographic stone used in engraving.

The particular advantage of Germany in minerals is that the coal and the iron are found near together and close to navigation; this is especially the case in the valleys of the Rhine, the Elbe, and the Oder.

Manufacturing. Germany is a great manufacturing country. Iron and steel are the chief products, the principal centre being in the region known as the valley of the Ruhr. The towns of this valley, notably *Essen*, are famous for their steel products, especially for cutlery, machinery, needles, and firearms. Germany is also a great ship-building country and in this is surpassed only by the United Kingdom. The largest part of this industry is carried on at the great ports of *Stettin*, *Hamburg*, *Danzig*, and *Kiel*.

There is extensive cotton manufacturing, especially at *Cologne*, *Elberfeld*, and *Chemnitz*. Woollen manufactures are well developed in the east, near the supply of wool. The manufacture of beer and wine is a prominent industry.

Commerce. Germany is the second of the countries of Europe in its commerce, and carries on about one eighth of the world's trade,— the larger portion is with the United Kingdom, Russia, Austria-Hungary, and the

The Museum and the public square of Berlin.

United States. North Germany controls the maritime trade, and South Germany the commercial trade, with the neighbouring countries. Its chief imports are cereals, wool, cotton, and metals; its exports include sugar, cotton, and woollen manufactures, coal, iron goods, and machinery. Its cotton goods are sent to the warmer regions of Central and South America, and its woollen goods to the colder part of South America.

Hamburg, the greatest seaport on the continent of Europe and the third in the world, owes its supremacy to its location on the most south-easterly inlet on the North Sea, and on the lower Elbe, which, next to the Rhine, is the chief water-way of Germany. *Bremen*, which is nearest the Atlantic, is a close rival, but is less favourably situated, because the Weser River offers less extensive water connections with the interior.

A German town built on a small plateau.

Centres of Interior Trade. *Berlin* is the capital and the principal railway and manufacturing centre of Germany. Owing to its position on the northern plain and its water connections with the coast towns, it has become the chief interior city in trade. It is famous for its fine art galleries, its great university, and its beautiful streets. *Munich*, noted for its breweries, largely controls the commerce between North Germany and the Adriatic Sea. *Breslau* commands the trade with Austria-Hungary and south-eastern Europe. *Leipzig* leads in printing books, is the seat of a great university, and the world's chief fur market. *Cologne*, from its position between France and Germany, is a great railway centre for trade with western Europe. It is also noted for its beautiful cathedral, which took six hundred years to build. *Danzig* exports the timber and wheat brought down the Vistula. *Dresden* exports metal goods, and *Magdeburg*, *Hanover*, and *Brunswick* have extensive sugar-refineries and a large sugar trade. *Strassburg*, an active trade centre, is noteworthy, also, as an important stronghold.

People. The agricultural people of Germany have acquired habits of thrift and perseverance, because they have been compelled for generations to win a livelihood from a soil that is nowhere extremely fertile. In spite of such difficulties, Germany has advanced very rapidly within the last three decades. Its progress in manufactures and commerce is undoubtedly due, in large part, to the excellent system of compulsory education, to the great attention paid to technical instruction, to the influence of its many universities, and to the successful application of scientific knowledge to practical purposes The Germans have some claim to be considered as the intellectual leaders of Europe during the past century.

Government. The German Empire consists of twenty-five federated states besides Alsace-Lorraine which is Imperial Territory. The Imperial Crown is vested in the King of Prussia, who bears the title of Kaiser. The Imperial Parliament consists of a Federal Council appointed by the States in proportion to population, and of the Diet of the Realm, elected by the people. Universal suffrage prevails, and voting is by ballot. In international affairs, the Emperor is largely absolute; but in internal matters, the Emperor must have the consent of the Federal Council and the Diet.

Scenery. The valley of the Rhine is one of the most famous in the world for its beauty, and the old castles and many cities of historic interest along its banks make this a favourite route for entering Germany.

This is one of the most interesting of European countries. Its great advances in learning, in industries, and its renowned educational institutions, attract both students and transient visitors from many parts of the world.

LXXIII. SWITZERLAND

Surface and Drainage. Switzerland is a small republic lying in the very heart of Europe. It has no sea-coast, and more than one half is occupied by mountains. Between the Alps lying on the south and east, and the Jura on the north-west, there is a high valley, averaging about 1,300 feet in altitude, which forms the agricultural section of the country.

Climate. Owing to the altitude of Switzerland and to its position on the continent, it has a cool climate. Its rainfall is about as great as that of eastern Canada. Above the height of 8,500 feet there is perpetual snow, so that in the higher altitudes there are many glaciers and snow fields.

A glacier high up in the Alps. Note the stream which flows from under the ice.

The rigorous winter climate is often modified by warm winds which blow over the mountains from the south. When there is a storm area over Germany, the air is drawn in from all sides. That which comes from southern Europe loses a large part of its moisture as it rises to cross the Alps. As it descends on the north side of the mountains, it grows warmer, melts the snow, and brings unusual warmth to Switzerland.

Products of the Soil. Agriculture is an important industry in Switzerland, although the amount of land that can be devoted to it is small. The only agricultural product of value in trade is wine, which is made from grapes raised on the sunny slopes of the Jura and the Alps.

Grazing is very important; nearly three fourths of the land which is not covered with forests, ice, or snow, is devoted to this industry. The cattle and the goats are driven to the higher regions in summer and to the lowlands in winter. Cheese and condensed milk are exported.

Minerals. There is not much iron or coal to be found in Switzerland; salt, and building stones are the chief rock products.

Manufacturing. In spite of the lack of fuel and iron, the principal occupation in Switzerland is manufacturing; one third of its people are thus employed. Owing to the position of Switzerland in the heart of the continent, it can easily trade with all its neighbours, and the magnificent power furnished by its rapid streams afford excellent facilities for manufacturing. The water-power here, as in Italy, is being utilized more and more in developing electricity for this purpose.

Watches and clocks are the leading manufactures, and for these *Geneva* is noted. Straw-plaiting is carried on in the homes of the people. Silk is produced, especially at *Zurich* and *Basle*, where the weaving is done mainly by hand. Cotton is woven at *Zurich* and at *St. Gall.*

Trade. Owing to the roads that have crossed the mountain passes for centuries, and to the modern railways, some of which pierce the Alps in long tunnels, Switzerland has an excellent opportunity for trade with the north and with the ports on the Mediterranean. It has to import coal, gold for its jewelry, raw silk, and food stuffs. It obtains cotton, wheat, and petroleum from the United States. The chief exports are silks, cottons, watches, machinery, cheese, condensed milk, and embroideries. Its trade is chiefly with Germany, the United Kingdom, France, Asia, and Italy. The most important centre is *Zurich*, which from its situation is the meeting point of several railways.

People. The people are of two distinct races, the Teutonic and the Latin. The former is represented by the Germans, who make up two thirds of the population, the latter by the Italians, the French, and the Romanish. There are twenty-two Cantons, or Districts, united into a Federal Republic. Four languages are spoken — German, French, Italian, and Romanish, a dialect of Latin, but the great majority of the people speak German. Each of the states or *cantons* of Switzerland can almost be said to have a different type of inhabitant from any of the neighbouring cantons. The mountainous character of the surface does not favour the intermingling of the people. Each valley is a more or less isolated region, and hence the inhabitants have little chance to exchange ideas with their neighbours. Thus there is no such uniformity of customs or similarity of ideas as is found in a nation living upon a plain. In spite of these conditions, however, the Swiss have a strong love for their country, a characteristic of almost all mountain peoples. They are brave, daring, and independent.

Scenery. Switzerland is noted the world over for the grandeur of its scenery, its magnificent mountains and lakes, and its great glaciers, and is more visited by tourists than any other country in Europe.

Capital. *Bern* is the capital of the Swiss Confederation.

LXXIV. ITALY

Surface and Drainage. The Kingdom of Italy includes the long peninsula, the islands of *Sicily* and *Sardinia*, and many small islands along the coast. The larger part of the country is occupied by the Southern Alps and the Apennines which form the backbone of the peninsula. The Alps slope down abruptly to the great plain of *Lombardy*, which constitutes the most of the lowlands of Italy. To the west of the Apennines, from Genoa to Naples, is a hilly country covered with materials thrown out by long extinct volcanoes, and with detritus brought down by the rivers.

All the good land is in the plain of Lombardy or close to the coast, so that nearly one fourth of the people live within three miles of the sea. In the Alpine region there are many large and beautiful lakes, which act as reservoirs for holding back the water that comes from the snow and rains of the mountains. Owing to the abrupt slopes, there are few long rivers in Italy. The longest is the *Po*, which, with its tributaries, is navigable for about six hundred miles.

In the south of Italy and on the island of Sicily are two of the most famous volcanoes of the world, *Mount Vesuvius* and *Mount Etna.* Vesuvius is always quietly active, with dangerous eruptions every few years.

Sicily, the largest island in the Mediterranean, is mountainous. The soil in the valleys is very fertile, and fruits and grain are grown in abundance.

Sardinia, a large island in the Mediterranean, west of Italy, is mountainous. It has long been celebrated for its fruit and wine.

Climate. As Italy lies in the westerly wind area in the winter, the larger part of the rainfall comes at this season. It is protected from the cold, continental winds of the north by the lofty Alps. On the east, south, and west its shores are washed by the Mediterranean. The climate, therefore, is warm and equable — in fact, except in the higher altitudes, the temperature rarely falls below the freezing point. The Mediterranean coast about the Bay of Genoa, known as the Riviera, has such a balmy winter climate that it is a popular winter resort.

The crater of Mount Vesuvius.

As the horse-latitude belt moves northward in summer, this season is dry in Italy, and irrigation is necessary for successful agriculture as in the other countries of southern Europe. In these regions several crops are grown each year. In the lowlands, where there is an abundance of moisture and where the temperature is high, malaria is very prevalent.

On the Grand Canal, Venice, with the island of Saint George in the distance.

Products of the Soil. Abundant sunshine and fertile soil make Italy essentially an agricultural country. In the basin of the Po, with its warmth and abundant water supply, rice is the chief crop. Indeed, more rice is raised here than in any other country of Europe. Olives are grown everywhere, and much olive-oil is produced. Flax and hemp, wheat and corn are leading crops in the northern plain, and cotton is raised in southern Italy, Sicily, and Sardinia.

Italy is second to France in production of wine, and this, together with oranges and lemons, is the staple product. The production of raw silk is also important; more than 6,000,000 people are engaged in raising silk-worms.

Wherever the climate is especially favourable for agriculture, every available spot is used. The steep slopes are broken into steps by a series of terraces, the tops of which are cultivated. Here the fields, laid out in a regular plan on the steep hillsides, are very picturesque.

Minerals. Iron is found in Italy, but is not mined to any extent. On account of the absence of coal, manufacturing is carried on at a great disadvantage. The principal rock products are sulphur, and Carrara marble, which is much used by sculptors. The island of Sicily produces from its volcanic fields more sulphur than any other country in the world.

Fisheries. The fact that Italy has a coast-line more than four thousand miles long, with many good harbours, makes fishing easy and profitable. But so great is the demand that not enough is secured for home consumption. Sponges, sardines, and oysters are the chief ocean products which are of importance in trade. Red coral, which is much used in making jewelry, is found along the west coast.

Manufacturing. The increased use of the abundant water-power and the development of electricity from the mountain streams have greatly stimulated manufactures. There are factories for the weaving of silks, woollens, cottons and flax; and many people are employed in the making of lace, Venetian glass, straw goods and statuary.

Trade. Because of Italy's proximity to Africa and the Suez Canal, it has an important carrying trade. By the help of the railways it is able to carry on an extensive inland trade. The larger part of the exports to other countries of Europe also go by rail, in spite of the fact that its harbours are good and numerous. The chief ports are *Venice*, *Genoa*, and *Naples*. Genoa, on account of its position and its excellent railway connection with the interior, receives large amounts of the products of Germany in transit to Mediterranean ports and the Far East.

The chief imports are cotton, coal, cereals, silk, timber, machinery, and tobacco. The chief exports are raw silk, cottons, silks, olive-oil, sulphur, eggs, and wine. Trade is largely with the United Kingdom, Germany, United States, France, and Austria.

Bologna, *Turin*, and *Milan* are the chief trade centres in the interior.

People. The people of Italy are descended from many different races, but they are now united by the common Italian language which is derived from the Latin language.

The Cathedral, Milan.

Like other peoples in semi-tropical countries, the Italians are impetuous, quick-tempered, and somewhat easy-going. They are fond of music, festivals, and sports, and dress in bright coloured costumes.

Government. Italy is a Limited Monarchy, with two Houses of Parliament; the Senate and the Chamber of Deputies. The former consists of royal princes, high officials, men of wealth, and men eminent in science, literature, etc.; the latter, of deputies elected by the people.

Scenery. The volcanoes, mountains, and lakes are visited by many tourists, but the principal places of interest are those which are noted for their historical associations, their art treasures, or as resorts for health and pleasure.

Rome, the capital, was once the most important city in the world, and now contains many ruins which are signs of its former splendour, such as the Colosseum and Forum. It is also famous for its art galleries, which are much visited by tourists and students from all parts of the world. Among its noted buildings are *St. Peter's*, the largest and most famous church in the world, and the Vatican, an enormous palace occupied by the Pope, and containing a wonderfully interesting library.

Venice, the city in the sea, is built on more than a hundred small islands, and travel is largely carried on by means of boats, or gondolas, which traverse the many canals. It is full of beautiful palaces and churches, relics of a former period of wealth, power, and splendour. The water and the clear blue sky both add to the general beauty of the region, so that it is a favourite resort for artists and tourists.

Florence, with its great olive gardens and its world-famous art galleries, is another city much visited by tourists and artists. *Naples*, the largest city of Italy, on the beautiful bay of the same name, has the threatening Mount Vesuvius in the background. Other places of interest much visited are *Syracuse*, in Sicily, and the pretty towns along the Italian Riviera.

Palermo, the chief city of Sicily, and a beautiful town on the north coast, is of great commercial importance in the wine, orange, and marble trade.

Ruins of the Forum, a place in Rome where public matters were discussed.

LXXV. AUSTRIA-HUNGARY

Size and Surface. The Empire of Austria-

Hungary includes the two countries, *Austria* and *Hungary*, which maintain an army and navy in common, but are independent in local affairs. Its varied surface ranges from high, rugged mountains to almost unbroken plains. It is an inland region, with the exception of a short, almost inaccessible coast on the Adriatic, on which *Trieste* is the only important port. It includes the high eastern Alps, the *Bohemian Plateau*, nearly the whole of the Carpathians, part of the *Dinaric Alps*, and the Plain of Hungary.

The public square and market, Vienna.

Climate. Austria-Hungary is extremely varied in its climate. In the southern provinces the winters are mild and the summers dry, as they are in most Mediterranean countries. In the interior the winters are very cold and the summers hot, while the eastern portion has the climate belonging to the plains of the great dry steppe region of Eurasia.

Products of the Soil. Austria-Hungary by reason of its climate and soil is pre-eminently an agricultural country.

The country as a whole is a great cereal-growing region, and the large crops of wheat in the Plain of Hungary make it one of the great granaries of the world. Rye is grown in the colder mountain areas, maize in the sunny south, and oats in Hungary and northern Austria; while the sugar-beet is cultivated extensively, especially in Austria. The vines of Hungary produce some of the finest wines in the world.

Forests abound in the highland areas of the north-west and in the Carpathians, and furnish wood employed in the making of wine and beer casks for use in France, Italy, and Germany.

Stock-Raising. The country as a whole raises more horses than any other country in Europe except Russia; also large numbers of mules, in the drier and warmer steppe regions. Cattle are raised, and dairying is carried on in the higher pastures of the Alps, as in Switzerland and France.

Mining. Austria-Hungary abounds in coal and iron, gold, silver, salt, and zinc. Most of the coal produced is mined in Bohemia or in the region north and south of Vienna. The proximity of good coal makes Vienna, the chief city of the country, the centre of a manufacturing district.

Manufacturing. Manufacturing has developed slowly, largely because of the lack of new machinery and modern methods, and also because the country has poor connection with ocean ports.

Budapest, the capital of Hungary, in consequence of its dry atmosphere, is especially favourable for the milling of wheat into the best flour.

Textiles are, on the whole, the leading products of the country. Carpets and silks are manufactured at *Vienna*.

Gloves and leather goods are made at *Vienna*, *Prague*, and *Innsbruck*. Most of the leather comes from the highlands of Hungary and the Balkan Peninsula.

Another product of Austria-Hungary that is of great importance is Bohemian glass, distinguished by its beauty of colouring.

Trade. The passes which connect the country with its sea-coast on the Adriatic, and the gap of the Danube at the Iron Gate are the chief outlets for trade. The few railways centre at Vienna and at Budapest.

Vienna, the capital, stands at the crossing of the chief north-south and east-west routes, and hence is the leading commercial city. It has many fine buildings and a famous university.

The railways are more important than the rivers, because the latter flow into inland seas. The *Danube*, with its trade with eastern and south-eastern Europe, is the most important water route.

The imports are chiefly wool and cotton for the textile mills, coal, and tobacco. Cotton is brought from Egypt and the United States. The chief exports are sugar, eggs, pottery, and beer. The larger portion of the trade is with Germany and the United Kingdom.

People. Austria-Hungary is a country of many nationalities and many languages. The Germans are most numerous in the north, the Italians in the south-west, and the Sclavs in the east. The Magyars, one of the Mongolian races, form about half the population of Hungary.

The Government of Austria-Hungary is a limited monarchy. The supreme authority is vested in the Emperor, who is also King of Hungary. Each department of the Empire has its own Parliament, consisting of an Upper House and a Lower House, the latter being elective. In addition to the Parliaments, each province has its own Diet and each commune has its local Council.

Scenery. Austria-Hungary is an interesting country. Its two chief cities are much visited: Vienna, because of its present progress and its interesting history; and Budapest, because it is one of the most accessible of the cities which are distinctly eastern or oriental in character.

Tyrol. Because of their natural beauty, Bohemia and the Tyrol are the regions most admired and visited by tourists. The Tyrolese mountaineers, with their picturesque costumes and villages, attract many artists.

LXXVI. ROUMANIA AND THE BALKAN PENINSULA

ROUMANIA

Surface. The Kingdom of Roumania is a continuation of the great plain of Russia, which has already been described. It also contains the delta of the Danube River, the largest channel for internal trade in Europe. It is separated from the Balkan Peninsula by the Danube River, and is bounded on the west by the Transylvanian Alps and the great rugged wall of the Carpathians.

Roumanian peasants spinning in their cottage.

Climate; Products; Cities. Owing to the inland position of Roumania, it has a wide annual range of temperature, and has its rainfall in the early summer. The rainfall decreases toward the south-east, so that this portion of the country is a pastoral region. Elsewhere the abundance of sunshine makes this a great area for the production of maize and wheat.

Bukarest, the capital, is a great trade centre, situated at the crossing of two railways from Austria-Hungary to the Black Sea; *Galatz*, from its position on the Danube, carries on trade with Germany.

THE BALKAN PENINSULA

Surface; Importance. The Balkan Peninsula is a distinctly mountainous country, one of the most mountainous in Europe, and includes the several countries, *Servia, Bulgaria, Montenegro, Turkey,* and *Greece.*

Forming as it does a land bridge between the prosperous regions of Europe and the densely inhabited countries of Asia, the Balkan Peninsula is a great highway of trade. Two important railways follow the natural depressions between the mountains, and connect Constantinople and Salonica with Belgrade, and thence with the cities of Austria-Hungary.

City of Thera, on the volcanic island of Santorin. Grapes for wine are found on the adjacent slopes.

Climate. The centre and the Black Sea coast of the Balkan Peninsula have a continental climate, with cold winters and warm summers. The greatest rainfall is in summer, when the south-west monsoon winds bring moisture from the Mediterranean. The east coast along the Ægean has mild winters, and the Adriatic coast has a much warmer winter than is found along the Black Sea.

Eastern Turkey is largely a steppe area of extreme dryness.

Products. Forests cover vast areas of this region, and in these many sheep and goats are raised, especially in Servia and Greece. These animals feed on the acorns and the beech-nuts. In the warmer valleys maize, tobacco, and cotton are raised, but agriculture on the whole is not well developed.

COUNTRIES

Servia. Servia, because of its position, exports a large portion of its swine, cattle, and agricultural products to Austria-Hungary. *Belgrade,* the capital of the kingdom, is the chief centre of trade, and in this neighbourhood carpets, cotton, and silk goods are manufactured.

Bulgaria. Bulgaria is in part fertile and prosperous. Its most valuable products are grain, animals, and attar of roses, a very delicate perfume made from rose leaves. *Sofia,* the capital of the kingdom, is the chief town and trade centre, by reason of its position on the Constantinople-Belgrade Railroad.

Montenegro. Montenegro, a small and unimportant kingdom, is so mountainous that stock-raising is the chief industry. It also does some fishing, but its total products are so few that nearly everything except food has to be imported. The capital is *Cetinje.*

Turkey. Turkey in Europe is now a small country. The greater part of the Turkish possessions, forming the remainder of the Ottoman Empire, are in Asia Minor and in Arabia, though Turkey has considerable territory in northern Africa. It is the only non-Christian country in Europe. Its ruler, the Sultan, is a despot and the empire is in a very backward condition.

Turkey exports fruits, tobacco, mohair, and silk in small quantities, and imports the larger part of its food products and manufactured goods.

Constantinople, the capital, on a beautiful harbour known as the Golden Horn, and at the crossing of the land and sea routes to the east, controls the Black Sea commerce, and is the principal port. *Salonica* is the second port and town in importance.

Greece. Greece has neither fuel nor power, so that it is not adapted to manufacturing. It has few railways or highways. It has many fine harbours, however, and large numbers of people are engaged in fishing. In early times its enterprising mariners controlled the commerce of the Mediterranean. Its people have always been seafarers. Agriculture is the chief industry.

The city of Constantinople.

Live stock, chiefly sheep and goats, are raised. Fruit is grown by the help of irrigation. Olives, tobacco, certain grapes dried and known as currants, and wine from the peninsula and the Greek islands furnish the exports. Textiles and leather-working are carried on in the homes of the people.

Athens, the capital of the kingdom, was once the most famous city of the world, and in ancient times the leader in the arts, poetry, and science. Athens, like Rome, abounds in evidences of its former greatness, and is much visited for its historic interest and its many impressive ruins. The most noted and beautiful ruin is that of the Parthenon, an ancient temple situated on the Acropolis, a high hill overlooking the city.

SUMMARY

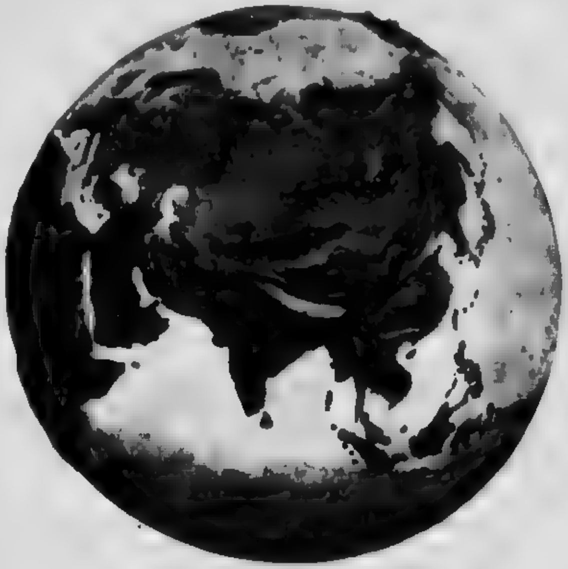
Western Europe, with its moist climate and large area available for occupation, is densely inhabited; but the population grows more scanty toward the east where the dryness precludes occupations which permit people to live close together. The continent has a great variety of climate and surface, and an extensive coast-line. Thus nearly all the nations have ready access to the sea, even though they have no sea-coast. Within its area have grown up the countries of the world which are most important, not only for their present progress and wealth, but because for many centuries they have exercised a very profound influence upon the world as a whole. The great nations of Europe have been the leaders in exploring and colonizing; and the United Kingdom, Germany, Norway, and France still lead in the work of exploration. The United Kingdom, Germany, France, and the Netherlands have, together, more than two thirds of the trade of the continent, while the continent as a whole has three fifths of the commerce of the world.

ASIA

LXXVII. THE CONTINENT AS A WHOLE

Size and Population. The continent of Asia is more than twice the size of North America; it includes more than one third of the land of the world, and more than one half of the people.

Coast-line. The coast of Asia is bordered by a great number of seas, bays, and gulfs, extending in an unbroken series from Bering Strait on the north-east to the Red Sea on the African boundary. These seas, with their protected waters, have always favoured the development of coastwise trade, except in the north and north-east, where the waters are frozen for many months in the year.



The position of Asia among the continents.

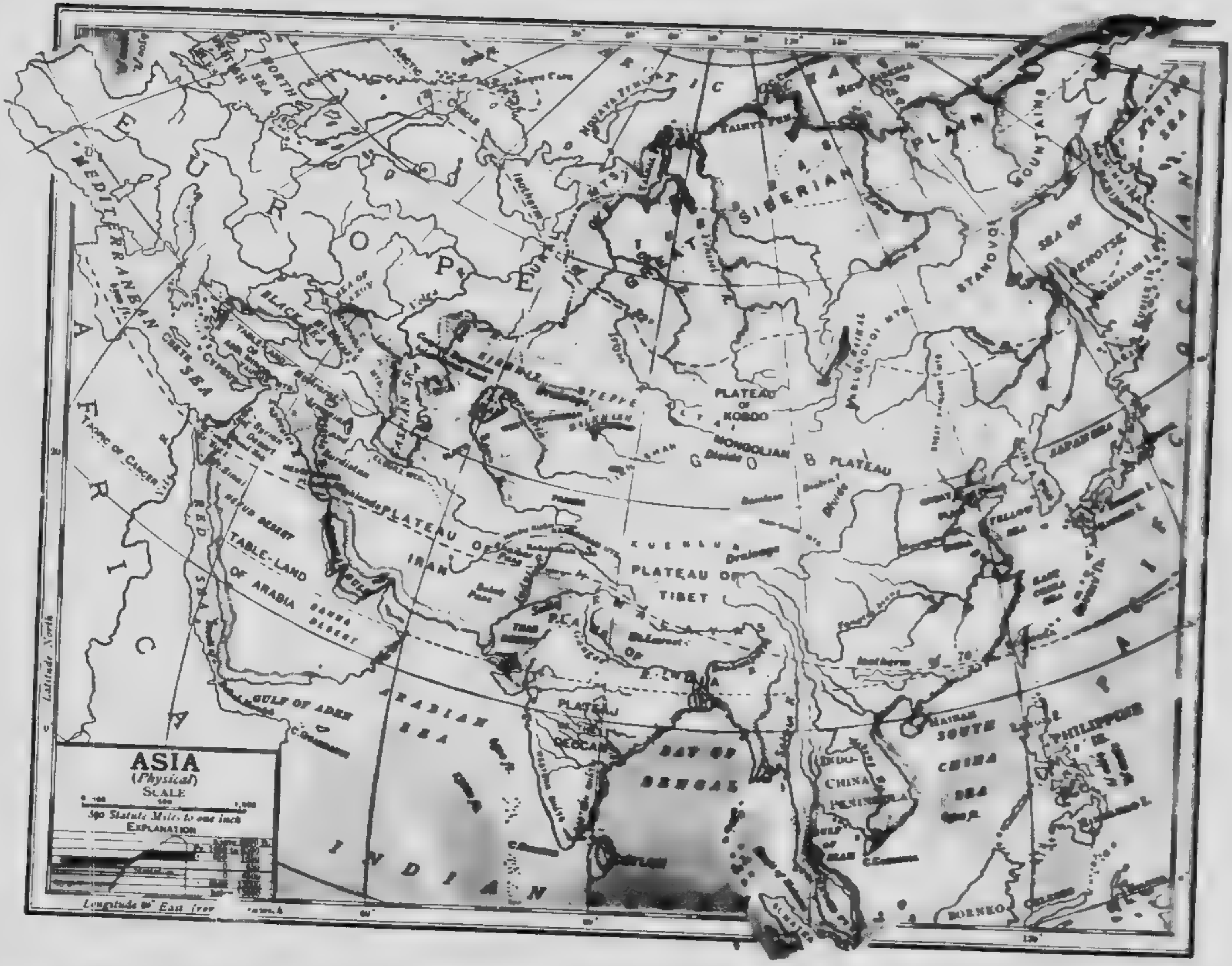
The Great Northern Plain. Asia includes a larger area of plains than any other continent. The great northern plain, which extends from south of the Caspian Sea to Bering Strait, is a continuation of the plain of northern Europe. A large part of this great region lies less than six hundred feet above the level of the sea, and its surface is but little broken by hills. As a result, there are no barriers to break the force of the winds which in winter sweep across the plains with great force.

The south-western portion of this plain is, in part, below the level of the sea, and contains a broad area of interior drainage. Here we find several lakes and seas, which are now only shallow bodies of extremely salt water surrounded by gently sloping shores, the soil of which is full of salt.

Rivers of the North. The great rivers of the plain, the *Ob-Irtish*, the *Yenisei*, and the *Lena*, flow northward. In the spring their head-waters, thawing before their lower courses have melted, pour down an enormous volume of water which floods the country and does great damage. Similar conditions give rise to floods on the Mackenzie River in Canada.

The Great Central Highland. The larger part of central Asia consists of a great highland and plateau area, which includes the loftiest peaks of the world. The huge mountain ranges forming this highland, radiate in all directions from the Pamir Plateau, or "roof of the world," which is situated in southern Turkestan. To the west extend the *Hindu Kush* and the *Elburz* mountains. To the east and north-east lie the *Tian Shan*, the beginning of the continental divide which separates the long rivers flowing north and west from the shorter streams flowing south and east. This divide includes the *Altai*, *Yablonoi*, and *Stanovoi* mountains.

South of this divide, and east of the Pamir Plateau, lie the great interior plateau or desert region of *Gobi*, and the higher plateau


ASIA
(Physical)
SCALE
500 Statute Miles to one inch
EXPLANATION
Longitude 10° East from Greenwich
Latitude North
EUROPE
AFRICA
ASIA
BRITISH ISLES
NORTH SEA
MEDITERRANEAN SEA
CRETE
CYPRUS
BLACK SEA
SEA OF AZOV
CASPIAN SEA
TABLE-LAND OF ARABIA
RED SEA
GULF OF ADEN
ARABIAN SEA
INDIAN OCEAN
PLATEAU OF IRAN
PLATEAU OF TIBET
KUENLUN
HIMALAYA
PLATEAU OF DECCAN
BAY OF BENGAL
INDO-CHINA PENINSULA
GULF OF SIAM
SOUTH CHINA SEA
HAINAN
PHILIPPINE IS.
BORNEO
YELLOW SEA
JAPAN SEA
SEA OF OKHOTSK
BERING SEA
STANOVOI MOUNTAINS
SIBERIAN PLAIN
ARCTIC
NOVAYA ZEMLYA
GREAT PLAIN
URAL MTS.
STEPPE
PLATEAU OF KOBDO
MONGOLIAN PLATEAU
GOBI
Tropic of Cancer
Isotherm
PACIFIC OCEAN

of *Tibet*, the latter with an average elevation of more than fifteen thousand feet. This plateau area is bounded both on the south and on the north by high mountains, exceedingly difficult of passage. Of these the most important are the *Himalayas* ("abode of snow"), the highest mountains of the world.

Transportation in the cold regions of Central Asia.

Rivers of the South and East. The great rivers of southern and south-eastern Asia rise within the mountain ranges — some of them in the Plateau of Tibet — and break through these great barriers in narrow gorges, which are often difficult of passage. The most important are the *Hwang-Ho* and *Yangtse-kiang* in China; and the *Ganges-Brahmaputra* and *Indus* in India. Each of these great streams is navigable for long distances in its lower course, and is for this reason of great importance to the country through which it flows.

These rivers, as they flow out toward the sea, carry an enormous quantity of detritus from their head-waters. This detritus, deposited along their courses for centuries, has built up great alluvial plains with gentle slopes and fine, well-watered soil.

With the exception of the *Amur*, which flows north-east into a sea frozen in winter, and the *Tigris* and *Euphrates*, which lie in an equally unfavourable dry region, all these river valleys are areas of dense population.

The Table-lands of the South. The two great southern peninsulas of Asia, *India* and *Arabia*, are high table-lands.

The peninsula of lower India, known as *The Deccan*, is highest in the west, where the table-land rises in mountain-like peaks known as the *Western Ghats*. On the east the table-land is low, and faces the ocean in a ridge known as the *Eastern Ghats*.

The table-land of Arabia, forming the greatest peninsula in the world, is high in the south and lower in the north. Lying in the heart of a great desert region, Arabia has no rivers, and is of little commercial importance.

Climate. The continent of Asia, on account of its size, has the most strongly marked continental climate in the world. Because of its great extent in latitude, the temperature ranges from the most extreme cold in the north to the excessive heat of the tropics. Elevation causes a great variation of temperature in the highland areas; the peaks of the Himalayas rise far above the snow-line, while their foot-hills are covered with tropical vegetation.

The great plains and plateaus of the interior of Asia are centres from which strong winter winds blow outward, carrying cold toward the oceans. They are therefore very cold and dry at that season.

When the interior region is warmed by the strong rays of the summer sun which penetrate the dry air, the average July temperature, in places in the northern plain, is more than 95 degrees Fahrenheit.

On the southern coast in summer, the monsoon, blowing from the ocean in toward the Heat Equator, which at that time has advanced to its most extreme northern position, carries an abundance of moisture toward the interior plains of the south.

Vegetation. The distribution of vegetation follows closely the distribution of heat and moisture. Along the northern coast is the great *tundra* belt, covered with mosses,

In the hunting ground of northern Asia.

lichens, and low bushes which bear berries during the brief summer season. On the south the tundra area merges into the evergreen forests, with their larches and firs,—the great hunting ground of northern Asia. South of the forest area is an arable region, in which agriculture is now beginning to be carried on.

The lowland area around the Caspian Sea and Lake of Aral is a *steppe*, extending as far east as the river Ob. The lowland plains of southern and south-eastern Asia are swept by monsoons, and have an abundance of vegetation of a tropical and sub-tropical nature due to warmth, moisture, and sunshine.

Animals. The most important animals of the northern tundra and forests are the reindeer, and fur-bearing animals, which yield a large portion of the furs of the world. Throughout this area, wherever occupied, and in south-eastern Asia, horses, asses, and cattle have been introduced; camels, sheep, and goats are found in great numbers in the steppe regions. The yak has been domesticated and is extensively used as a beast of burden in the highlands of Tibet. In India, the buffalo and the elephant have been domesticated and are the only animals of the Oriental region of any special value to man.

People. More than five sixths of the vast population of Asia are found in the monsoon area, particularly in India and China. The favourable climate and the abundant vegetation in these regions enable large numbers of people to secure the necessaries of life from a small territory.

Vladivostock, the terminus of the Trans-Siberian Railway.

Three fourths of the people of Asia belong to the yellow, and the remainder to the white race. The white race includes the Jews, Syrians, Arabs, Hindus, and Persians.

XXVIII. RUSSIA IN ASIA

SIBERIA

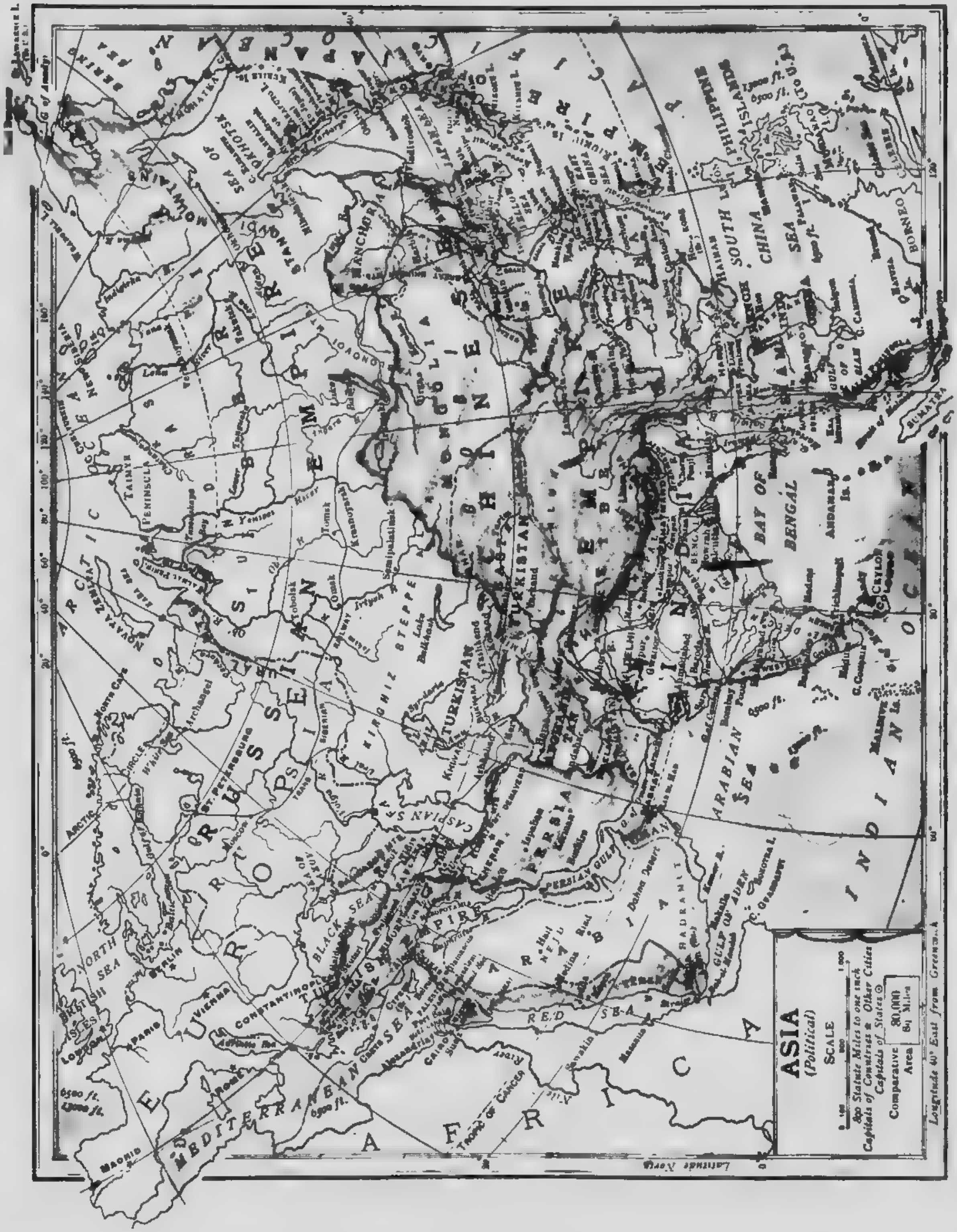
Area and Population. The Asiatic portion of the Russian Empire which includes *Siberia*, *Turkestan*, and *Caucasia*, has an area greater than that of all Europe, but a population less than that of Belgium. The inhabitants are mainly peasants, and persons who have been deported from Russia.

Surface. West of the Yenisei River, Siberia is flat and marshy, contains many lakes, and has a deep, rich soil. The divide between the Ob-Irtish and the Yenisei is almost imperceptible. East of the Yenisei the country is stony and rolling, with frequent exposures of the underlying rocks. The north-east has a varied surface, undulating, and often extremely rough.

Climate. The winters of Siberia are long, very cold, and dry; the severity of the winter increases from the west to the north-east. The summers are short and hot, with sufficient moisture for successful agriculture in the west-central portion.

Products of the Soil. The chief agricultural products of Siberia are wheat, rye, and oats,—grains which are particularly adapted to cool climates where the summers are short.

On account of the lack of transportation facilities, the timber of the immense forests of Siberia is not of any particular commercial



ASIA
(Political)
SCALE
800 Statute Miles to one inch
Capitals of Countries ● Other Cities
Capitals of States ⊙
Comparative Area
Longitude 40° East from Greenwich
RUSSIAN EMPIRE
EUROPE
CHINESE EMPIRE
MONGOLIA
TIBET
INDIA
PERSIA
ARABIA
TURKISH EMPIRE
TURKESTAN
KIRGHIZ STEPPE
SIBERIA
JAPAN
MANCHURIA
AFRICA
ARCTIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
MEDITERRANEAN SEA
BLACK SEA
CASPIAN SEA
RED SEA
ARABIAN SEA
BAY OF BENGAL
SOUTH CHINA SEA
SEA OF OKHOTSK
JAPAN SEA
YELLOW SEA
PERSIAN GULF
GULF OF ADEN
PHILIPPINE ISLANDS
BORNEO
SUMATRA
CEYLON
ANDAMAN Is.
NORTH SEA
BRITISH ISLES
TROPIC OF CANCER
ARCTIC CIRCLE
LONDON
PARIS
BERLIN
VIENNA
ROME
MADRID
CONSTANTINOPLE
ST. PETERSBURG
BERING SEA
NOVAYA ZEMLYA
KAMCHATKA

importance but the furs obtained there are of great value.

Mineral Products. The principal mineral products are gold and silver. Coal, iron, lead, and copper are also found, but the coal is poor. Mining is as yet but little developed.

Trade. Siberia is unfavourably situated for carrying on trade. It has no harbours open throughout the year, no canals, and few good roads. The only great railway is the *Trans-Siberian*, finished in 1902, which connects Russia in Europe with Vladivostock, on the Japan Sea. The distance by rail from St. Petersburg to Vladivostock is about 5,633 miles.

The only towns of any considerable size in Siberia are *Tomsk* and *Irkutsk*, each of which has a population of more than fifty thousand, and is a centre for the local government. *Vladivostock* is a Russian naval station on the Pacific coast. Its harbour is, however, closed by ice for three months of the year.

TURKESTAN

Situation and Surface. Turkestan lies to the west of China, and north of India, Afghanistan, and Persia. Its surface, consisting of plains in eastern Turkestan, and of high plateaus in the Pamirs, is very rugged. Most of the country, owing to its position, is either a desert or a steppe.

Products; Cities. Millet, maize, rice, and flax are grown under irrigation, largely for home consumption, and some cotton is raised for export.

The only towns of any size are irrigated oases like *Merv*, *Khiva*, *Bukhara*, *Samarkand*, and *Tashkend*. These centres are connected by the only railway in this part of the country.

Breaking rice in Southern Turkestan.

CAUCASIA

Situation and Surface. Caucasia includes land on both sides of the Caucasus Mountains. It is a country of mountains and tablelands, with rich valleys lying between.

Products. The climate and soil of the valleys favour grapes, corn, and cotton. Petroleum and manganese are found in large quantities, and are the chief natural resources of the region. In fact, Caucasia furnishes more than one third of the world's supply of petroleum.

Cities. *Tiflis* is the principal town, but *Baku*, in the Caspian petroleum field, is growing rapidly on account of the development of the oil industry.

LXXIX. ASIATIC TURKEY

Surface and Climate. Asiatic Turkey includes *Asia Minor*, *Mesopotamia*, *Syria*, and *Palestine*, and wide strips of coast in Arabia. A large part of the area is a table-land three thousand feet high. The only important lowland is the *Tigris-Euphrates* valley, forming what is known as Mesopotamia.

Damascus, a walled city.

Owing to the location, the rainfall of the region is scanty except on the hill slopes facing the sea. The desert-like character of much of the country confines the people to pastoral occupations, except in the irrigated regions.

ASIA MINOR

Products. Asia Minor is in the main arid, but along the coast, where irrigation is carried on, crops peculiar to the shores of the Mediterranean are raised.

Smyrna, the chief town, exports raisins, cotton, opium, figs, barley, licorice, carpets, wool, and sponges.

Sponges are secured from the Ægean Sea, and the wool is shorn from the Angora goats.

Transportation and Trade. Asia Minor has but few good highways, although there are remains of old Roman roads; at the present time, most of the interior transportation is carried on by means of horses and cattle. *Trebizond*, a port of increasing importance on the Black Sea, is the terminus of a caravan route through Mesopotamia and northern Persia.

SYRIA AND PALESTINE

Surface and Climate. Syria is a country of great historic and religious interest. It consists of a narrow coastal plain, somewhat wider to the south than to the north, and bordered on the east by two abrupt ranges of mountains. These mountains are covered with forests, and between them lies the wonderful depression containing the *Jordan River* and the *Dead Sea*.

The Dead Sea is 1,290 feet below sea-level, the deepest natural depression in the world, and its waters are very salt. On the great plateaus of eastern Syria grazing is extensively carried on, and in practically the same way as in the time of Christ.

Palestine, called also the *Land of Canaan*, the *Land of Israel*, the *Holy Land*, the *Promised Land*, etc., is a narrow strip in south-western Syria about half the size of Nova Scotia.

Products. The chief products of Syria are silk, tobacco, and oranges.

Cities. *Beirut*, connected by rail with Damascus, is the chief port. *Damascus* produces cloth, leather, and inlaid work; these products have been distinguished for centuries by their fine quality. *Jaffa* is the port of *Jerusalem*, and is connected with that ancient city by a railway.

The Jordan. Shepherds crossing the river with their flocks.

ARABIA

Surface and Climate. The great desert table-land of Arabia receives rain only in the province of *Yemen* in the south-west, and in the independent state of *Omar* in the south-east. In spring and autumn these two places have a limited rainfall and certain crops can be grown, especially coffee.

Products; Cities. In the interior of Arabia, horses, camels, and dates are produced. Arabian horses are known the world over for their speed, beauty, and intelligence.

Bedouins, or nomadic Arabians.

The principal city of Arabia is *Mecca*, the birthplace of Mohammed, and the Mohammedan holy city. In the extreme south-west of Arabia, on the Gulf of Aden, the British port of *Aden* controls the sea route to India. The country round it is very dry; water for drinking is obtained by distilling sea-water. The people are nomadic, and each tribe is ruled by its sheik.

MESOPOTAMIA

Soil and Climate. Irrigation formerly made the low-lying plain of Mesopotamia very rich; and here were situated the great cities of *Babylon* and *Nineveh*, now only mounds of ruins. Frequent wars and poor government have caused the prosperity of the country to decline. The climate is so very hot that in summer the people live in underground chambers.

Products; Cities. The only products for export are cereals, dates, wool, gum, and hides. Mules and camels are raised in great numbers. *Bagdad*, at the head of navigation on the Tigris, is the chief town.

LXXX. PERSIA, AFGHANISTAN, AND BALUCHISTAN

PERSIA

Surface and Climate. Persia occupies the *Plateau of Iran.* Owing to its position and surface, it is very dry, except on the mountains, where some rain and snow fall in winter. *Teherân*, the capital, is situated in the interior. The ruler, or Shah, is an absolute monarch.

People. The people of Persia belong mainly to the Indo-European race, to which has been added a considerable number of Mongolians.

Products and Trade. In the valleys and along the Caspian Sea — the only fertile regions — cereals and fruits are grown. Other products are brass work, and carpets, rugs, and shawls made from the wool of the mountain sheep and goats. These products, together with opium, raw silk, cotton, and horses, are sent to Europe, and especially to Russia.

Commerce is carried on by boats over the Caspian Sea, and by caravan to Trebizond. The leading imports are calico and other cotton fabrics,— the characteristic imports of hot regions. Teherân and Tabriz are the chief cities.

AFGHANISTAN AND BALUCHISTAN

Surface and Climate. Afghanistan is a very mountainous country. Owing to its altitude and location, the climate, like that of the rest of western Asia is dry. In the lower valleys, however, some agriculture is carried on. Owing to its rugged highlands, immense mountain ranges, and easily defended passes leading from Central Asia to India, Afghanistan is of great importance to the British Empire, as a bulwark against Russia. *Kâbul* is the capital.

People. The dominant race in Afghanistan is the Indo-European; but there are many foreign elements, so that the people are divided into a great many discordant tribes or clans, about four hundred in all. The Ameer is a despotic monarch in all internal affairs. In all its foreign relations the country is under the direction of British India, from which the Ameer receives a subsidy.

Baluchistan is an arid, unproductive country, under the control of the British government. It is, in the main, a table-land.

Products and Trade. Where the climate is favourable—as it is in the valleys—cereals, apples, and the vine are grown. In the colder, higher altitudes, cattle, goats, and camels are raised. The only trade routes of any significance are from *Herat* to the Caspian Sea, and the caravan route through the *Khaibar Pass*, "the gateway to India."

LXXXI INDIA

Position and Population. The Empire of India, a part of the British Empire, occupies the great peninsula of southern Asia, and extends on the north to the Himalayas. It is nearly one half as large as Europe, and contains approximately one fifth of the people of the world.

Surface and Drainage. India is bounded on the north-west, north, and north-east by table-lands or very high mountains. The peninsula portion is the Deccan plateau or table-land, varying in altitude from 1,500 to 2,500 feet, with a narrow coastal plain bordering the Eastern Ghats. Between the table-land and the Himalayas is the great plain occupied by the Indus and the Ganges-Brahmaputra rivers. This plain is from 150 to 300 miles wide, and contains the densest population and the most important commercial districts of southern Asia.

The harbour of Calcutta: foreign steamers being loaded from native boats.

Climate. The climate of India is that always found in a district swept by monsoons. In winter, from November to February, when the northern monsoon blows, the climate is dry and cool. In the rainy season, from June to October, when the southern monsoon prevails, the climate is warm and extremely wet.

The valley of the Indus is almost rainless, owing to the absence of mountains and to the fact that the south-western trade-winds have passed over so small an area of water that they have not become sufficiently saturated to produce rain when they cross the warm lowland.

Canals and Irrigation. Throughout India, except in the lower Ganges, and in the upper stretches of the rivers of the Deccan, extensive canals have been built to carry water from the rivers for purposes of irrigation. On the Deccan and in the plains about Madras, the water of the rainy season is caught in tanks which have been built in the ground, and is used for irrigation during the dry season.

Vegetation. The plains are practically treeless, but they support a heavy vegetation. The principal lumber product of value is teak, a very hard and durable timber found in the forests of the Deccan.

Products of the Soil. Owing to the favourable climatic conditions and to the richness of the soil in the great plains and on the Deccan, agriculture is the leading occupation of the people of India. In the irrigated regions two crops a year are harvested, one in October and the other between January and March.

The most important crops of India are rice, which forms the principal food of the people, wheat, millet, and other cereals; tobacco, jute, and oil-seeds, such as linseed, castor-beans, and mustard. Opium is produced abundantly in central India, and cotton is raised on the black lava soil of the Deccan. Tea is one of the principal crops

A road cut through a banyan tree, on the banks of the Ganges.

of the foot-hills of the Himalayas, and of south-western India and Ceylon.

Minerals. India is rich in minerals, especially coal, iron, copper, and gold, but the coal is poor, and the smelting of iron is therefore costly.

Manufacturing. India was formerly famous for the weaving of fine silks, muslins, shawls, carpets, and rugs, also for its ivory, gold, silver, and copper articles. These goods are still produced, but owing to the introduction of modern machinery and cheap dyes, the quality is not so good as it once was. The only manufactures of any importance are cotton, paper, and jute. Bengal and Bombay are the manufacturing localities.

Trade; Cities. India has an immense trade, especially with the United Kingdom. The exports to the United Kingdom are tea, wheat, jute, oil-seeds, rice, cotton, and indigo. Opium is sent to China. The imports are largely provisions and manufactured goods, such as cottons, yarns, and machinery. Foreign trade is centred chiefly at *Calcutta*, *Bombay*, *Madras*, and *Karachi*. *Calcutta*, the former capital, is the chief trade centre in the valley of the Ganges. *Delhi*, near the centre of northern India, is the present capital. *Simla*, in the Himalayas, is a noted summer resort. *Bombay*, with a fine protected harbour, is situated on an island off the west coast of India.

Madras, also with an artificial harbour, lies in the midst of the rich plains of lower India, and is the fourth in rank among the ports of that country.

Karachi, at the mouth of the Indus, has an artificial harbour which cannot be used by large vessels during the south-west monsoon. It is the great Indian port for the export of wheat.

NEPAUL AND BHUTAN

On the southern slopes of the Himalaya Mountains are the two small independent principalities, *Nepal* and *Bhutan*. A British Resident with a small escort of Indian Sepoys lives at the capital of Nepal.

LXXXII. CEYLON

Size and Situation. Ceylon, a crown colony of Britain, is a little larger than Nova Scotia. It is separated from southern India by a narrow strait. This strait is so shallow in places that vessels from Madras to the west coast of India have to go around the island.

Surface and Climate. The southern half of Ceylon is extremely mountainous; the northern half is a low, flat plain. The mountainous part has an ample rainfall, but the northern plains are too low to receive much moisture from the winds which sweep over them; for that reason there is little rainfall at any time during the year. The climate is remarkably uniform and in the mountainous region is healthful.

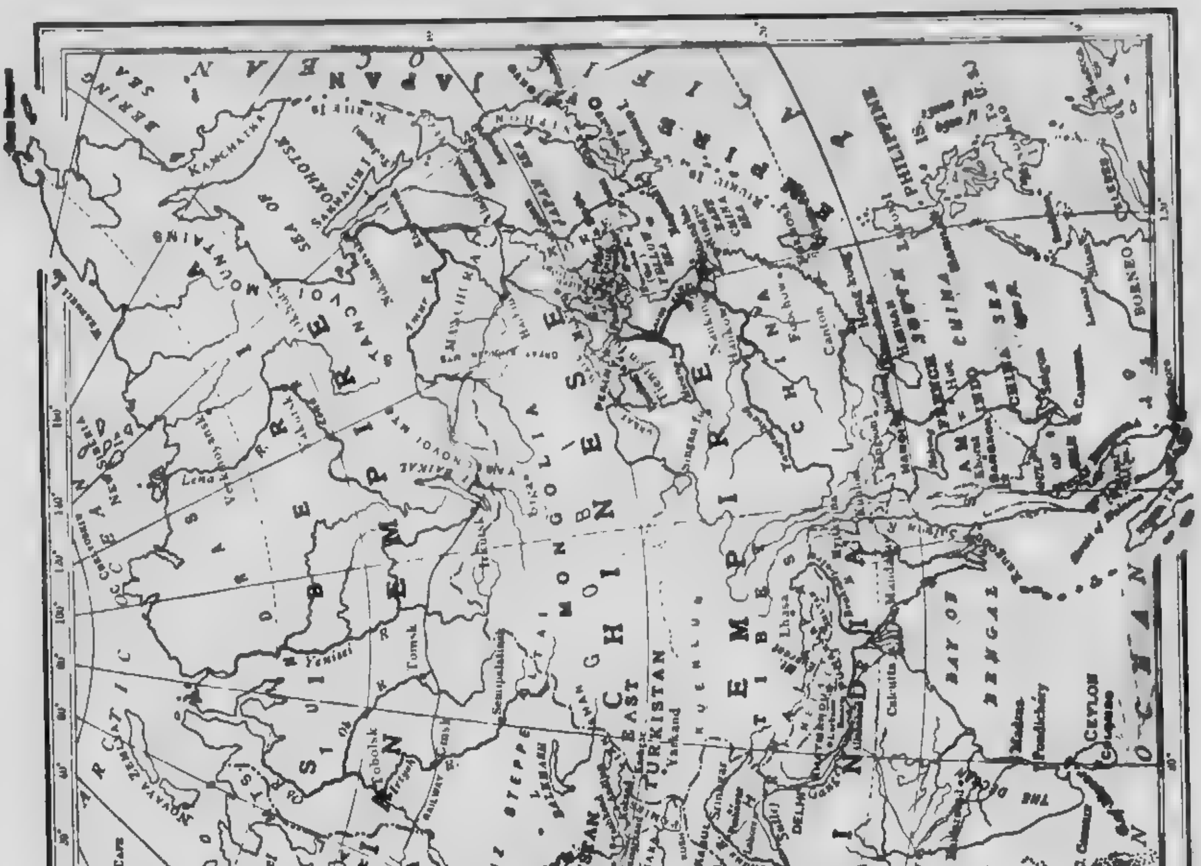
Productions and Trade. The mountains of Ceylon are occupied largely by Europeans engaged in growing tea, which has in recent years replaced coffee. Tea-growing is the chief occupation, and tea forms nearly half the exports. The lower plains and the hills, with a warmer, more moist climate, are devoted to rice and cocoa-nuts. Pearl-fisheries are, as a rule, profitable in the *Gulf of Manaar*.

Ploughing in Ceylon.

Colombo is a calling port for vessels plying between Europe and the Far East by way of the Suez Canal. In the interior, near large and attractive botanic gardens, is *Kandy*, the old capital.

LXXXIII. INDO-CHINA

The Peninsula as a Whole. Indo-China, sometimes called Farther India, includes *Upper* and *Lower Burma*, which is part of British India; *French Indo-China; Siam*, an


ASIA
(Commercial)
SCALE
0 100 500 1000
Statute Miles to one inch
Principal Prod cts
Navigable Portions of Rivers
Most important Railroads
Most important Steamship Lines
Longitude 40° East from Greenwich
Latitude North
ARCTIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
BERING SEA
SEA OF OKHOTSK
JAPAN
PHILIPPINE IS.
CHINA SEA
BAY OF BENGAL
ARABIAN SEA
PERSIAN GULF
GULF OF ADEN
RED SEA
CASPIAN SEA
BLACK SEA
MEDITERRANEAN SEA
NORTH SEA
RUSSIAN EMPIRE
SIBERIA
MONGOLIA
CHINESE EMPIRE
MANCHURIA
TIBET
EAST TURKISTAN
TURKISTAN
KIRGHIZ STEPPE
AFGHANISTAN
BALUCHISTAN
PERSIA
ARABIA
OMAN
INDIAN EMPIRE
CEYLON
THE DECCAN
TURKISH EMPIRE
CYPRUS
CRETE
EUROPE
RUSSIA
AFRICA
BORNEO
KAMCHATKA
SAKHALIN I.
STANOVOI MOUNTAINS
YABLONOI MTS.
TROPIC OF CANCER
ARCTIC CIRCLE
NOVAYA ZEMLYA
Archangel
Tobolsk
Tomsk
Yenisei R.
Lena R.
Amur R.
L. Baikal
Peking
Nanking
Hankow
Canton
Hong Kong
Manila
Calcutta
Lhasa
Delhi
Bombay
Madras
Pondichéry
Colombo
Karachi
Kandahar
Kabul
Herat
Yarkand
Semipalatinsk
Ispahan
Bushire
Bagdad
Mecca
Aden
Muscat
Damascus
Smyrna
Constantinople
Odessa
Moscow
St. Petersburg
Berlin
Vienna
Trieste
Rome
Naples
Genoa
Marseilles
Paris
Calais
London
Liverpool
Hamburg
Madrid
Lisbon
Oporto
Valencia
Barcelona
Cadiz
Cairo
Suez Canal
Gibraltar

independent country; the *Malay States;* and the *Straits Settlements*, which belong to Britain. It is narrow and low at the *Kra Isthmus*.

Surface and Climate. Indo-China is a plateau crossed by range after range of mountains extending north and south; one of these projects to form the Malay Peninsula. Low plains exist in French Indo-China and in the valley of the Irawadi. The climate is everywhere tropical, with a heavy rainfall.

BURMA

Products. The Irawadi River valley lies between higher lands covered with teak forests, and is extensively planted with rice. Burma exports more teak than any other country.

Rangoon is the chief port, and is accessible at high tide to large, ocean-going vessels. Rubber, petroleum, coal, gold, and rubies, together with teak, are the chief exports.

MALAY PENINSULA AND STRAITS SETTLEMENTS

Products; Cities. The products of the Malay Peninsula include rice, cotton, sugar-cane, sago, gums and spices. Tin is the leading product. Nearly two thirds of the world's yearly supply of this metal comes from the British Malay States.

A street near Singapore. Note the tropical vegetation.

The chief cities of the Malay Peninsula are *Malacca* and *Singapore*. Singapore is a coaling port for vessels plying between Europe and the Far East. It is a great ship-building centre, with large shipyards.

SIAM

Products; Cities. Siam is an independent kingdom. The only cultivated areas are the delta and the banks of the Menam River. These are devoted to rice. Teak grows in the higher hills, and gold and tin are mined in considerable quantities. *Bangkok* is the chief port and town, but owing to the presence of sandbars, it has a poor harbour.

FRENCH INDO-CHINA

Products; Cities. French Indo-China, a dependency of France, is much like Siam in products and climate. *Hanoi*, the capital, and *Saigon*, situated in the delta of the Mekong River, are the chief towns.

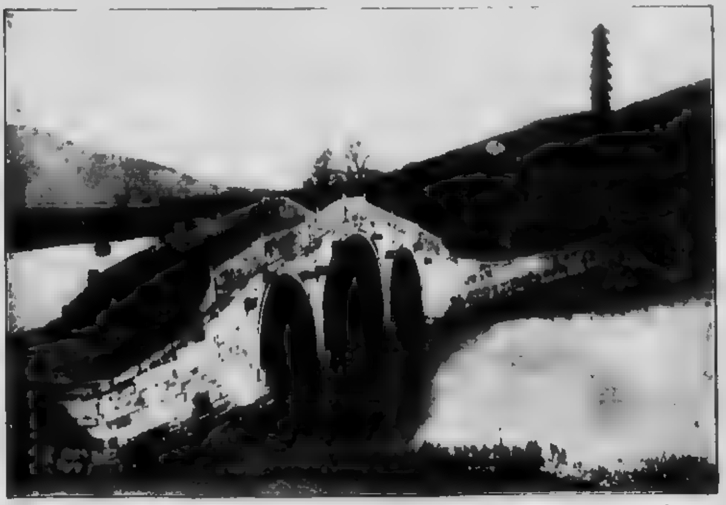
LXXXIV. THE CHINESE REPUBLIC

Position and Climate. The Chinese Republic includes *China*, *Manchuria*, *Mongolia*, *East Turkestan*, and *Tibet*. It lies on the eastern coast of the continent of Eurasia, and from its great extent has a wide range of temperature. The south has a tropical climate; in the north the winters are cold and rigorous; in the interior, there are desert conditions on the high plateaus of Tibet, Turkestan, and Mongolia.

Surface and Drainage. A large part of the Chinese Empire is extremely mountainous, and very thinly populated. The most important portion is the group of river plains along the eastern coast. Here the densest population is found. The *Yangtse-kiang* is navigable for a thousand miles, and ocean-going vessels can reach Hankow, six hundred and eighty miles up the river. The *Hwang-ho*, or *Yellow River*, sometimes called "China's Sorrow," because at times it bursts its embankments and sweeps away towns and villages, flows in its lower portion across a very flat, alluvial plain. This plain is so level that the river often changes its course; it formerly flowed into the Yellow Sea, but now empties into the Gulf of Pechili.

People and Government. The Chinese belong to the Mongolian race; they speak a language monosyllabic and uninflected. They profess and practise Buddhism, Confucianism, and Taoism. The bulk of the people are Buddhists but Confucianism is the state religion. There are, besides, many Mohammedans, especially in the north-west, and a number of Christian societies in different parts of the country. In 1912 the reigning family, which had been supreme in the state and in religion for centuries, was expelled, and China became a republic.

CHINA PROPER



An old stone bridge in China. Notice the seven-story pagoda.

Population. China is the most important of the five great divisions of the Chinese Republic. It is very densely inhabited, and contains nearly five sixths of the population of the entire country. The Chinese have been a very conservative people. They have refused to adopt new inventions or introduce labour-saving machinery. Recently there has been an awakening of the people and an acceptance of more progressive methods and ideas.

Surface and Climate. Southern China is mountainous, contains no plains, and has an extremely rugged coast. The climate is tropical or sub-tropical, with wet and dry seasons.

Products of the Soil. Tea, silk, rice, sugar-cane, opium, bamboo and cotton are the most important products of the soil. Rice is grown wherever possible, and forms the chief food of the people. In southern China the mountains are covered with heavy forests in which mulberry trees thrive. Hence the raising of silk-worms is the most important industry.

In northern China the soil is fairly fertile, but irrigation has to be employed in order to raise crops.

Mineral Products. The chief mineral products are coal, iron, and pottery clay. China is the only country having coal-fields rivalling those of North America; but little has been mined.

Manufacturing. Manufacturing is only slightly developed in China, and is mostly done by hand. Silk, cotton, paper, and porcelain goods are the leading manufactured products.

Transportation. Interior communication in China is poor, except over the plains and along the main water ways. There are few highways and fewer railways. The building of the latter, formerly opposed by the government, but now encouraged, is extending rapidly, especially about Peking.

Cities. *Shanghai*, at the mouth of the Yangtse-kiang, is the largest industrial city, and the only good port on the eastern coast of China.

Hong Kong, an island near the mouth of the Canton, a British possession since 1842, is the most important port except Shanghai. Steamers run daily between this port and *Canton*. *Victoria* is the chief town.

Hankow is an active river port. *Tientsin-fu*, the port of Peking, has a poor harbour.

Peking, the capital, is the best known city, and, as the seat of government, is in many ways the first city of China. Because it is practically the gateway to both Mongolia and Manchuria, it is of great strategic importance.

Trade. China ranks third in commerce among the Asiatic nations. Most of its trading is with the British port of Hong Kong, Japan, the United Kingdom, and the United States. It is notable that its chief exports have great value in proportion to bulk. China is the leading country of the world in the production of raw silk, and exports large quantities of tea, most of which is carried overland. The principal imports are cotton and opium. Some wheat and flour is supplied by Canada.

TIBET

Characteristics and Products. Tibet is a lofty and barren country, with an extremely severe climate. The scanty population is confined mainly to the valley of the *Brahmaputra*. Sheep and goats form the principal wealth; the yak is an important beast of burden. Cashmere wool is the most valuable product. The only town is *Lhasa*, the holy city of the Buddhists, in which, until recently, no foreigners were allowed.

In the mountainous country, Tibet. Notice the farmhouse built of stones gathered from the barren surface.

CHINESE TURKESTAN

Surface and Trade. The greater part of Chinese Turkestan is an arid, desert-like tableland, with a sparse, nomadic population. The only cultivated regions are in the oases at the foot of the mountains. *Kashgar* and *Yarkand* are the leading towns.

MONGOLIA

Climate and People. *Gobi*, one of the largest and driest deserts in the world, is almost co-extensive with Mongolia. The people are nomads, following their herds of horses, camels and sheep. They have scarcely any industries.

MANCHURIA

Industries. Manchuria is a mountainous region, with valuable, but little worked, deposits of coal and iron. Farming is carried on along the river valleys; grazing is everywhere the leading industry.

Cities. *Tairen* (Dalny), under Japanese control, at the end of the Trans-Siberian Railway, and *Port Arthur*, a Japanese naval station on the Yellow Sea, are the chief cities. *Harbin*, at the junction of the Manchurian and Trans-Siberian railways, is a growing town, and *Mukden*, on the Manchurian Railway, besides being the capital, is an important military stronghold.

LXXXV. THE JAPANESE EMPIRE

The Japanese Empire includes all the islands from Kamchatka to the Philippines (with the exception of the part of Sakhalin north of the fiftieth parallel) and Cho-sen, which was formerly known as Korea, and also the peninsula on which Port Arthur is located. The principal islands are *Niphon* or *Japan*, *Yezo*, and *Formosa*.

Surface. Japan is made up of extremely mountainous and volcanic islands. Owing to the volcanic activity, the country is shaken by severe earthquakes each year, and all buildings have to be constructed so as to withstand these shocks. So rugged is the surface that there are practically no highways to the interior, hence wheeled vehicles, except those drawn by men, are rare.

Climate and Vegetation. The climate of the Japanese Empire is both oceanic and continental in its character. Snow lies in the north until May, and copious rains fall in the south during the summer monsoon.

Owing to the genial climate during the summer, the growth of vegetation is very rapid. Forests abound in the north. One

Primitive ploughing in the mountain districts of Japan.

of the principal plants is the bamboo, which is used for furniture and paper; the tender shoots are used as food.

Products of the Soil. Agriculture is carried on wherever possible. The alluvial plains and terraced mountain slopes of the south, where the climate is warm and moist, are devoted chiefly to rice, sugar, cotton, and tea. Cereals abound in the cooler north. Fruits of all kinds are raised abundantly. Mulberry trees are cultivated as food for silk-worms in most of the provinces.

Mineral Products. Japan has rich coal-fields, much sulphur, and valuable deposits of iron and kaolin for pottery.

Manufacturing. In recent years, manufacturing in Japan has made wonderful progress. Silk, cotton, and other textiles are now produced by the factory system. Machinery and tool-making have become important industries. The Japanese are skilled in the making of porcelain and japanned ware.

Trade and Enterprise. *Yokohama*, the port of Tokyo, the capital, has an excellent harbour, and *Nagasaki* is an important ship-building centre, from which much coal is exported. The trade of Japan is largely with the United Kingdom, the United States, Canada, China, and Germany. Silk, tea, and coal are the most important exports. Sugar is imported from China, and machinery and cottons from Europe and America. The internal trade is carried on by means of state roads and railways. Japan has now more than 5,000 miles of railway in use.

Fifty years ago this unprogressive country, smaller in extent than Ontario, began to study western civilization—its customs, systems of education, industrial methods, and military and naval organizations. It adapted these to its own needs, with results almost marvellous, as evidenced by its defeat of Russia in 1904–05, and now Japan ranks among the great nations of the world. The Japanese are noted for willingness to learn, artistic instincts, personal courage, and intense patriotism.

The people belong to the Mongolian race. In 1880, the government was changed from an Absolute to a Constitutional Monarchy, having an Emperor, or Mikado, as he is called by foreigners, and an Imperial Diet consisting of a House of Peers and a House of Representatives.

CHO-SEN

Surface and Climate. Cho-sen, a mountainous peninsula lying between the Yellow Sea and the Japan Sea, is about as large as Great Britain. Formerly an independent country, it became in 1910 a Japanese protectorate. The winters in Cho-sen are severe and the summers are wet. The climate in spring and autumn is delightful.

Products; Trade. Forests abound in the hills of Cho-sen, and barley, oats, and millet are raised in the valley regions of the north, where the summer climate is similar to that of north-western Europe. Maize, rice, and

Japanese girls picking silk-worm cocoons from straw beds tobacco are the principal products in the more temperate south, where the valleys produce two crops a year.

The exports include ginseng, a root which is sent to China, hides, beans, and rice. The chief imports are cotton goods from the United Kingdom and the United States. *Soul* is the capital, and *Chemulpo* is the principal port.

People. The inhabitants of Cho-sen are tall, robust and fine looking, but shiftless. In dress, customs, and modes of building their houses, they resemble the Chinese. Education is very backward, and the only efficient schools are those conducted by the missionaries.

LXXXVI. THE MALAY ARCHIPELAGO

Ownership and Characteristics. The *Malay Archipelago*, or Malaysia, is made up of all the islands south-east of Asia, except those belonging to China and to Japan. It includes *New Guinea*, with the neighbouring islands, and the *Philippines*, which now belong to the United States. Most of the islands of the Malay Archipelago belong to European powers and are of importance to these powers on account of their products. *Sumatra, Celebes, Java*, most of *Borneo* and *New Guinea*, and the *Moluccas* belong to the Netherlands. Taken together, this group of islands is known as the *Dutch East Indies*.

A native house in the Malay country.

Climate. The climate of the Malay Archipelago is everywhere moist and tropical, with little range of temperature, and with only slight changes in the weather from day to day.

Plants and Animals. West of Wallace's Line, a line running between Borneo and Celebes and marking the division between two different animal and plant regions, are found palms, bamboos, laurels, oaks, and other trees common to Eurasia. Monkeys, tigers, rhinoceroses, tapirs, and elephants abound here as they do throughout the Oriental Region.

East of Wallace's Line the trees are the tall eucalyptus, and other forms characteristic of Australia. The animals are similar to those of the Australian Region.

Products. Coffee and tea are grown in Java. Tobacco is the chief product of Sumatra, coffee and cacao of the Celebes, and pepper of Borneo. The Moluccas or Spice Islands furnish most of our cloves and nutmegs.

Tin is found in considerable quantities in the islands of *Banka* and *Billiton*, and is the only important mineral mined in the archipelago.

People. The people belong to the Brown race. They are now Mohammedans, having been converted from Buddhism by the Arabs.

LXXXVII. SUMMARY

Asia, the largest of the great land masses, contains the broadest plains, the loftiest and the most extensive highlands, and the greatest area of interior drainage of any continent in the world. Owing to its size and position, it has the widest range of climate known; and because of the severity of its climate in the central and northern portions, large areas are sparsely populated and little known

In general it is an unprogressive continent. Agriculture and grazing are the chief occupations of the people. Manufacturing has been of little importance, but is developing rapidly in some countries, owing largely to the influence of Europeans, or to the enterprise of those nations which have adopted European methods.

Asia has a little more than one tenth of the commerce of the world, at least one third of which is centred in India. India and the Straits Settlements have more than one half of the commerce of the continent, and these regions, together with China and Japan, have more than three fourths of it.

AFRICA

LXXXVIII. THE CONTINENT AS A WHOLE

Size and Outline. Africa is, next to Asia, the largest continent, but it is outranked in population by both Asia and Europe. It lies very close to Europe, and is joined to Asia by the narrow isthmus of Suez.

There are no important islands bordering the coast of Africa. *Madagascar*, the largest island, is not connected with the continent by any shallows, and hence is an oceanic rather than a continental island.

The position of Africa among the continents.

Surface. The surface of Africa consists for the most part of a series of great plateaus, with mountain ranges rising above them, and a narrow strip of lowlands along the coast. The average altitude of the land in the northern half of the continent is under 2,000 feet, although this portion contains the *Atlas Mountains*, which rise to a height of more than 14,000 feet along the north-western coast. Just to the east of the Atlas range is a small area below sea-level.

Another highland runs north-east and south-west across the continent, from a point on the western shore of the Red Sea to a point north of the Gulf of Guinea.

The average elevation of the rest of Africa is about 4,000 feet. This region includes the Plateau of Abyssinia on the east, the most important highland of the continent. This plateau extends to the south, and is really continued into the *Kwathlamba* or *Drakenberg Mountains* of South Africa, although the highland is lost sight of in a part of East Africa. Close to the equator a series of old volcanoes rises to a height of 18,000 or 19,000 feet. Among these are *Kilimanjaro* and *Kenia*, the highest mountains of Africa.

Drainage. Although Africa contains some of the largest and longest rivers in the world, it is more deficient in routes for interior water commerce than any other continent. Each of the great rivers is interrupted somewhere in its lower course by a series of falls, which act as a barrier to trade and travel.

The longest river is the Nile, which flows north from the highlands down a succession of terraces into the Mediterranean. The size of this stream varies greatly at different times of the year. It receives most of its water from its eastern tributary when the wet seasons prevail in the highlands.

The *Congo*, flowing down across the interior plateau to the west, opens up the vast interior forests of Africa, but is so interrupted by rapids that it cannot readily be used as a trade route.

In western Africa, north of the equator, the *Niger* is the principal stream.

In the southern portion of the continent, the divide between the east and west drainage is chiefly to the west of the highland, so that the large rivers, the *Zambezi* and the *Limpopo*, have to cut through the ridge to reach the sea. More than a fourth of the continent has interior drainage.

In this region lies the large freshwater lake, *Lake Chad*, which in times of flood has an outlet to the north-east into a low, salt basin.

Climate. Owing to the position of Africa in the hot belt, the climate is everywhere tropical except in the extreme south. In the southern summer, Africa lies entirely in the trade-wind region and the region of the doldrums: the northern part, in the north-eastern trade-wind belt; the central portion, in the doldrums; and the south, in the south-eastern trade-wind belt. In the southern winter, these south-eastern trade-winds occupy the whole continent north of the southern tropic. As a result, the climatic features north and south of the equator are very symmetrical.

The Congo basin. Notice the dense forest and the canoe dug from a log.

The rainfall of Africa, except in the equatorial region, is extremely light. Throughout the larger part of northern Africa the annual rainfall is less than twenty inches; on the northern, or windward slopes of the Atlas Mountains it increases to more than forty inches in places.

The north-eastern trade-winds, originating in Asia or in southern Europe, pass over so small an area of water that they do not receive all the moisture they can carry. In their course over Africa they grow warmer, and therefore become capable of absorbing more moisture. Hence, they carry off moisture from the lands over which they blow. As a result, we find the largest desert in the world in northern Africa.

The rainfall of south-western Africa is under twenty inches; most of it falls in summer when the trade-winds bring moisture from the Indian Ocean.

Central Africa, between 10 degrees north and 15 degrees south latitude, is occupied by the doldrum belt, and therefore has a heavy rainfall. It is heaviest along the western coast, reaching a maximum in Liberia. Owing to the excessive warmth and moisture and the prevalence of swamps, this region is the most unhealthful in the world. The plateaus of the tropical region, however, rise to such a height as to have a climate cool enough for occupation by white people.

Vegetation. The vegetation regions of Africa are determined by the distribution of the rainfall. The coastal areas north of the Atlas Mountains are grass regions with trees, and can be cultivated. The southern slopes of the Atlas are a great steppe, which, in turn, merges into the immense desert plain, *Sahara*, with practically no vegetation

Cutting sugar-cane near Pretoria.

except that found in the oases. Grassy steppes are also found south of the Sahara, lying between the tropical savannas and the desert. This savanna region grows wider toward the east in the Sudan.

Central Africa is entirely occupied by open savannas and tropical forests; the forests are more dense than those found anywhere else in the world, except in the valley of the Amazon.

In the well-watered regions of the south-east, grasslands and agricultural regions are found. In the south-west is a steppe region, with deserts close to the Atlantic coast. This desert region, known as the *Kalahari*, is not so dry as the Sahara; this is shown by the fact that it has heavy dews almost every night.

Animals. The animals of northern Africa, as far south as the northern tropic, are like those of Europe. The rest of Africa belongs to the Ethiopian region, the general features of which have already been described.

In the savannas are great numbers of antelopes and giraffes, which feed upon the grass. Here are found also the *carnivora*, or flesh-eaters, such as the lion, the hyena, and the leopard, which prey upon the grass-eaters. In the forest regions are the tusked elephants, now being rapidly destroyed, and the man-like apes. Crocodiles and hippopotamuses abound in all the rivers of the tropical region. Camels and ostriches are found in the desert and steppe areas, and are of great value to man.

People. North of the southern Sahara the natives belong to the white race. Elsewhere they are blacks, but great numbers of Europeans are found scattered in the various colonies of South Africa. The blacks abound in the Sudan and in tropical Africa, and the Bantus, or light-coloured blacks, in South Africa. In the Congo forests are the primitive and dwarfed Negritos, the smallest people in the world.

LXXXIX. NORTHERN AFRICA

Countries. Northern Africa includes *Morocco*, *Algeria*, *Tunis*, *Tripoli*, *Egypt*, and so much of the northern portion of the Sahara as is under the protection of these countries. With the exception of the coast region of Algeria and Morocco, all this vast country is a desert in which irrigation is necessary to carry on agriculture. Irrigation is practised largely about the oases and in the river valleys of Morocco, Tunis, and Egypt.

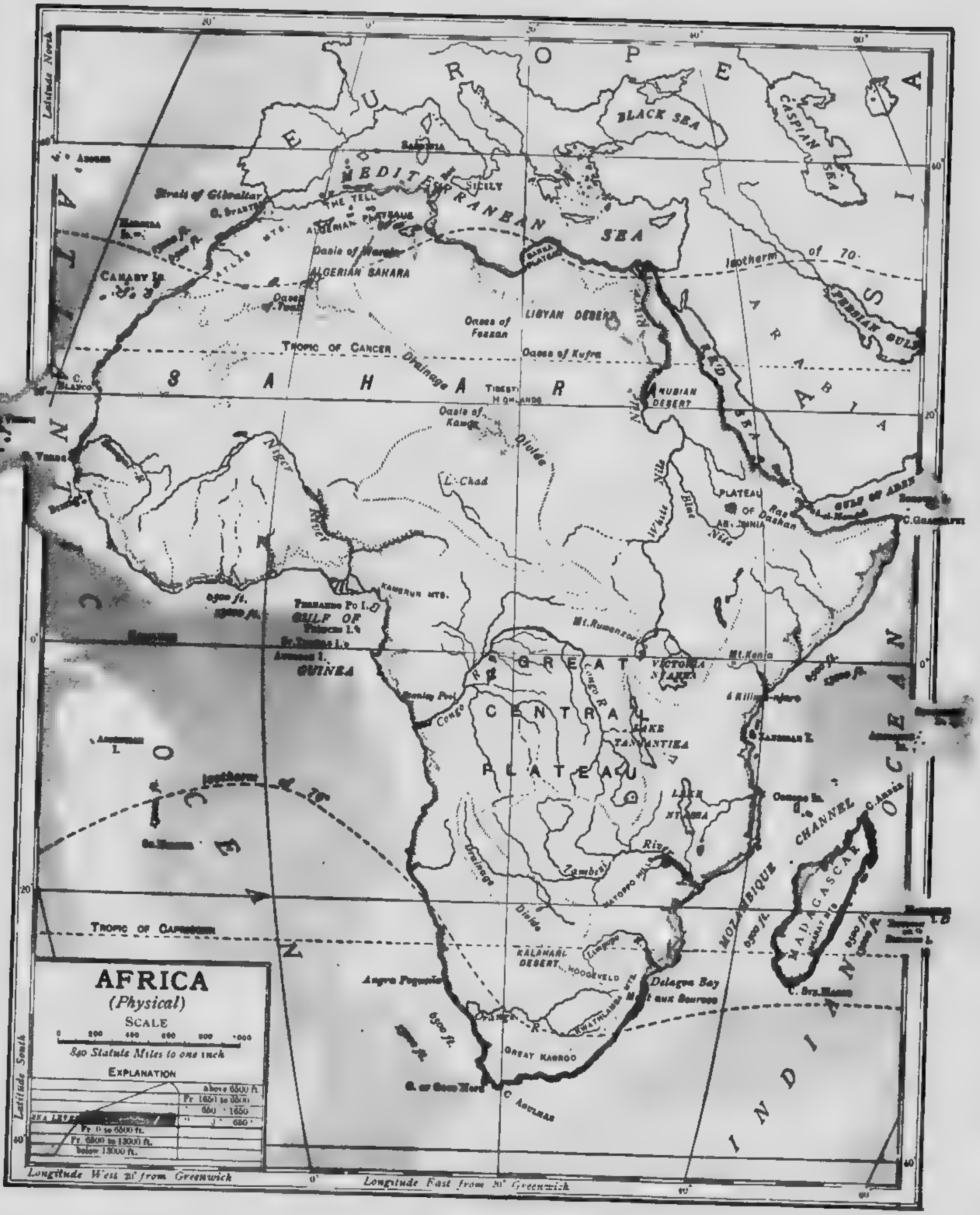
Negro warriors of Central Africa. Notice their hut behind them.

The people are mainly of three races: Berbers, Arabs, and Moors. Besides these there are many Greeks, Italians, French, Austrians, English, etc., also a few Russians and Germans.

EGYPT

The Valley of the Nile. Egypt is a tributary state of Turkey, though its financial affairs are managed by the British Government. It consists practically of the valley of the Nile, with the bordering desert areas.

The Nile, famous for its annual floods, receives most of its water from the Plateau of Abyssinia, where the rainfall is greatest in the summer months. The river begins to rise about the twenty-sixth of June, and overflows its banks in September. As the water settles, it leaves the flood plain thoroughly saturated with water and covered with a fine layer of silt. This silt forms a very excellent soil for agriculture, and

AFRICA
(Physical)
SCALE
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840 Statute Miles to one inch
EXPLANATION
above 6500 ft.
Ft. 1650 to 6500
" 650 " 1650
" 0 " 650 "
SEA LEVEL
Ft. 0 to 6500 ft.
Ft. 6500 to 13000 ft.
below 13000 ft.
Latitude North
Latitude South
Longitude West 20° from Greenwich
Longitude East from 20° Greenwich
EUROPE
ASIA
BLACK SEA
CASPIAN SEA
MEDITERRANEAN SEA
Sardinia
SICILY
Strait of Gibraltar
C. Spartel
THE TELL
ALGERIAN PLATEAUS
ATLAS MTS.
Oasis of Wargla
ALGERIAN SAHARA
Oases of Tuat
CANARY Is.
Madeira Is.
Azores
Barca Plateau
LIBYAN DESERT
Oases of Fezzan
Oases of Kufra
Isotherm of 70°
PERSIAN GULF
ARABIA
RED SEA
TROPIC OF CANCER
Drainage Divide
SAHARA
C. BLANCO
C. Verde
TIBESTI HIGHLANDS
NUBIAN DESERT
Oasis of Kawar
Nile
L. Chad
Niger
White Nile
Blue Nile
PLATEAU OF ABYSSINIA
Ras Dashan
GULF OF ADEN
C. GUARDAFUI
KAMERUN MTS.
Fernando Po I.
GULF OF GUINEA
St. Thomas I.
Annobon I.
Mt. Ruwenzori
VICTORIA NYANZA
Mt. Kenia
Kilimanjaro
Zanzibar I.
GREAT CENTRAL PLATEAU
Congo R.
Stanley Pool
LAKE TANGANYIKA
LAKE NYASSA
Comoro Is.
C. Amber
Ascension I.
St. Helena
Isotherm of 70°
Drainage Divide
Zambesi River
MATOPPO HILLS
MOZAMBIQUE CHANNEL
MADAGASCAR
C. Ste. Marie
Reunion I.
TROPIC OF CAPRICORN
KALAHARI DESERT
HOOGEVELD
Limpopo
Delagoa Bay
Mont aux Sources
DRAKENSBERG MTS.
Angra Pequena
Orange R.
GREAT KARROO
C. of Good Hope
C. Agulhas
ATLANTIC OCEAN
INDIAN OCEAN
6500 ft.
13000 ft.

therefore farming can be carried on with profit wherever irrigation is possible.

Irrigation. Two kinds of irrigation are practised in the basin of the Nile. In the upper, that is, southern Egypt, sufficient water is collected in large natural basins to irrigate the neighbouring region for about two and a half months of the dry season. The principal crops, therefore, are those that mature in a short growing season, such as beans, clover, wheat, and barley.

Egyptian sailing vessels on the Nile.

In the delta portion the water is pumped from the river and distributed over the land so that it can be used at all seasons. Thus, in this section, agriculture is possible the year round, and the principal crops are those that require a long growing season, such as cotton, sugar-cane, dates, and rice, though wheat, maize, and durra—the latter being the principal food of the people—are raised in large quantities.

A great dam has recently been completed at Assuan, so that the water of the Nile can be held back from November to April, and let out upon the lower countries as it is needed. The lake thus formed is about two hundred miles long Irrigation can now be practised in lower, or northern Egypt to a far greater extent than ever before, and the area devoted to agriculture has been greatly increased.

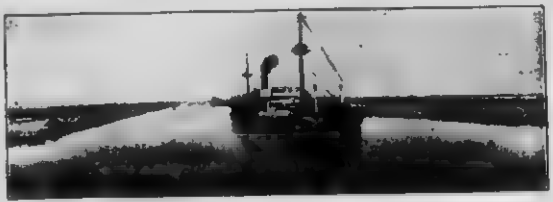
Products of the Soil. Upper Egypt produces wheat, barley, corn, clover, and beans. Wheat is the chief crop, and occupies one half the agricultural area. Lower Egypt raises cotton, wheat, millet, sugar-cane, rice, and sub-tropical fruits, such as figs, dates, lemons, and oranges. Cotton is the most important product. Egyptian cotton is very valuable, owing to its long fibre, which is much prized in fine spinning.

Trade. Nearly one half of the trade of Egypt is with the United Kingdom, and one-fifteenth with Germany. The chief exports are cotton and cotton seed; the chief imports are manufactured cotton, coal, wood, and metals. Ivory and rubber are secured from the most southern portions of Egypt.

Cities. *Cairo*, a picturesque and ancient city at the head of the delta of the Nile, is the capital of Egypt. Cairo is a favourite resort for tourists who desire to visit the famous Pyramids and the Sphinx, or to take the trip up the Nile.

Alexandria, at the mouth of the western distributary of the Nile, has long been the chief port of Egypt. *Port Said*, at the northern extremity of the Suez Canal, is a coaling station. Through it passes a great quantity of valuable products from the Far East.

The Suez Canal. The Suez Canal, from Port Said to Suez, is eighty-seven miles long, and lies entirely in Egypt. The completion of this canal has not only greatly shortened the distance by water between western Europe and the East Indies, but it enables vessels to follow a safer route than that around the Cape of Good Hope. About four thousand vessels pass through the canal annually. This, however, is far exceeded by the number of vessels passing through the Sault Ste. Marie Canals in Canada and the United States.



Steaming through the Suez Canal.

Progress. Great benefits have resulted from British management. Hundreds of thousands of acres have been reclaimed from the desert sands; railways and telegraph lines have been built, and a great stretch of the Cape to Cairo railway is now completed up the Nile; people have been freed from enforced labour; arbitrary taxation has been abolished, and the finances of the country put upon a substantial basis.

TRIPOLI

Characteristics; Trade. Tripoli, a Turkish province, includes the oases of Fezzan and the small plateau of Barka. The oases are the only rich portions of the region. *Tripoli*, the only seaport and the chief town, is the northern terminus of many important caravan routes across the Sahara. The chief exports, with the exception of dates, which are produced at home, are brought to Tripoli by caravans from the interior. They include ostrich feathers, ivory, skins, and gold.

A North African village.

ALGERIA AND TUNIS

Algeria and Tunis are both dependencies of France. Algeria is her richest and most valuable colony, and Tunis is under French protection. Many railways and highways have been built in Algeria at national expense; harbours have been constructed and artesian wells have been sunk. The people are progressive, and the country is increasing in importance.

Climate and Soil. The climate of both countries is like that of Spain and Italy, distinctly Mediterranean. The most important agricultural region lies on the coast of Algeria, and is known as the *Tell*. Another rich region is in Tunis, in the valley between the ranges of the Atlas Mountains, where the chief river, after winter rains, floods and enriches the country, very much as the Nile enriches Egypt. The region south of the Atlas is occupied by nomadic tribes, except where an occasional oasis gives opportunity for permanent habitation.

Products; Exports. The Tell exports olive-oil, wheat, barley, and early vegetables. In the plateau between the north and south ranges of the Atlas Mountains grows alfa-grass, which is very important in paper-making.

Cork-oak is found in both Algeria and Tunis; of this material Algeria exports more than Spain and Portugal combined. It also exports phosphates, iron and zinc, dates, and excellent wine.

Cities. *Algiers*, the chief port of Algeria, is an important coaling station for Mediterranean vessels. The Arab quarter is situated on a hill, with the modern town at its foot.

Tunis, owing to its location, is a busy shipping point. It is connected with the sea by means of a canal, so that ocean-going vessels can land cargoes at its wharves. Ten miles from Tunis are the ruins of ancient Carthage, at one time the rival of Rome.

MOROCCO

Morocco is an independent Mohammedan country in which European influence has thus far had little effect; indeed, large areas in the country are not safe for Europeans. The surface is rugged, except along the coast; the south-western portion of the Atlas Mountains is within the limits of Morocco. Owing to the absence of railways or highways, all travel is by horse or camel.

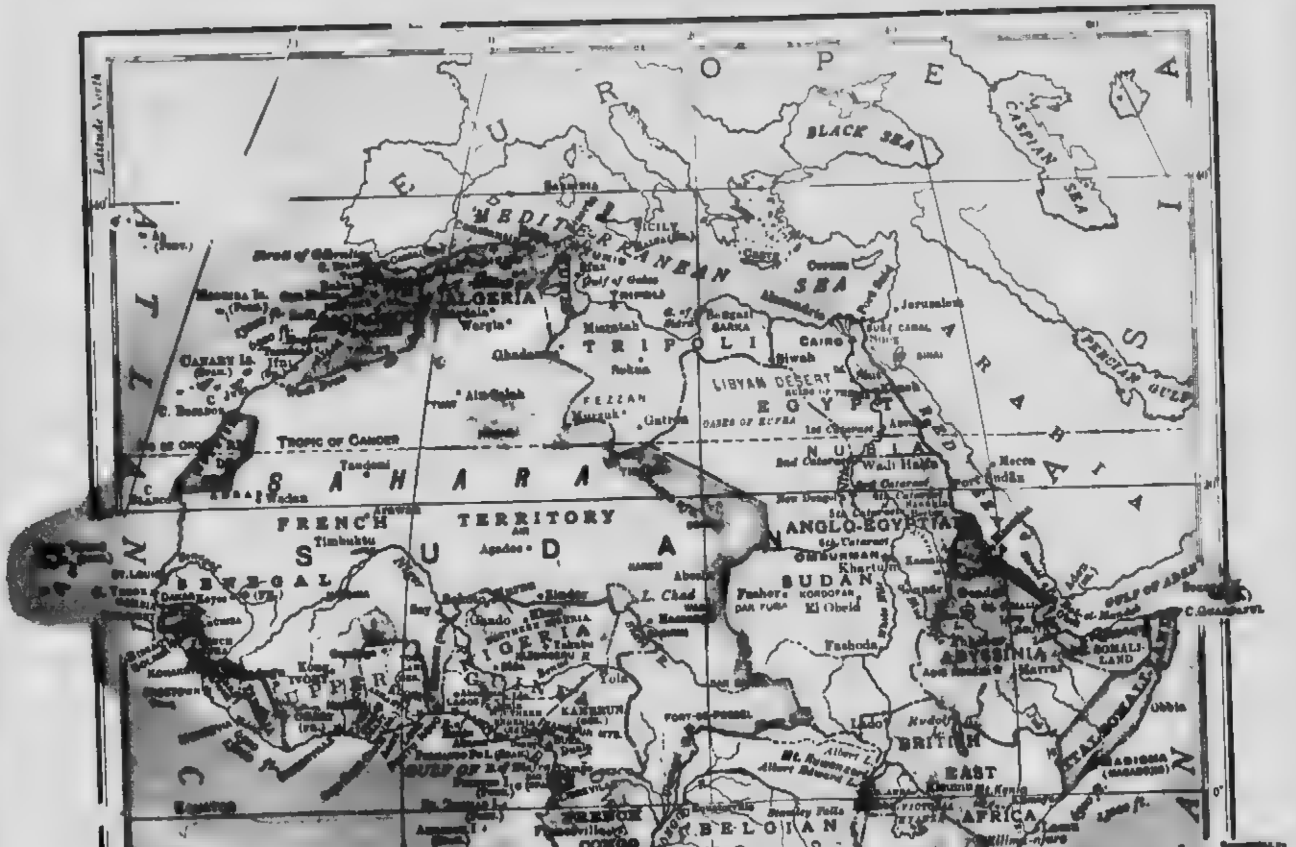
Climate; Trade. Morocco has a fine climate, excellent soil, and mineral wealth, especially in copper.

Tangier is the only noteworthy port in Morocco, and is the centre of trade. The commerce is small and is chiefly with England and France. The country exports small quantities of grain, eggs, beans, almonds, wool, oil, and some few characteristic manufactures, such as Fez caps and leather.

Natives and their mud hut villages in Portuguese East Africa.

XC. CENTRAL AFRICA

Countries and Ownership. Central Africa includes all the continent between the northern tropic and German South-west Africa. Within this vast area there are only two independent states — *Liberia*, a negro republic, and *Abyssinia*.


AFRICA
(Political)
SCALE
800 Statute Miles to one inch
Capitals of Countries ● Other Cities •
Comparative Area
80,000 Sq. Miles
Longitude West 20° from Greenwich
Longitude East from 20° Greenwich
Latitude North
Latitude South
E U R O P E
A S I A
BLACK SEA
CASPIAN SEA
PERSIAN GULF
MEDITERRANEAN SEA
ALGERIA
TRIPOLI
LIBYAN DESERT
EGYPT
NUBIA
SAHARA
FRENCH TERRITORY
SUDAN
ANGLO-EGYPTIAN SUDAN
SENEGAL
NIGERIA
ABYSSINIA
SOMALILAND
BRITISH EAST AFRICA
BELGIAN CONGO
FRENCH CONGO
GERMAN EAST AFRICA
ANGOLA
RHODESIA
GERMAN S.W. AFRICA
BECHUANALAND
KALAHARI DESERT
MOZAMBIQUE CHANNEL
ATLANTIC OCEAN
INDIAN OCEAN
TROPIC OF CANCER
TROPIC OF CAPRICORN
Cairo
Khartum
Timbuktu
Cape Town
Gulf of Aden
L. Chad

Abyssinia is an immense table-land with an average elevation of 7,000 feet. It is called the "African Switzerland." The country is ruled by a king.

The other countries are controlled by European nations, especially the United Kingdom, France, Belgium, Germany, Portugal, and Italy. Each of these nations is constantly endeavouring to increase its holdings, and almost every year new boundary lines are established.

A caravan about to start across the Sahara.

Climate. The climate of Central Africa is everywhere tropical in temperature, and varies in the amount of moisture from the extreme dryness of the Sahara to the excessive rains of the Congo Basin. In the lowland regions the climate is extremely weakening for white people, and even among the natives malaria is common.

Products of the Soil. In the grassy steppe region of the Sudan, just south of the Sahara, date palms and cereals are grown. In Upper Guinea and the southern British Sudan, cotton, maize, and millet can be grown.

In the damp equatorial belt of the Congo Basin and on the eastern coast, the products are all derived from the forests, — chiefly from cocoa and oil-palms and banana trees. Oil is exported for soap-making. Bananas are the chief food of the people. South of the Congo, in the savanna regions, cotton, maize, and millet are produced, as in the similar region to the north. In German and British East Africa, rubber, ivory, and coffee are the chief products.

Trade. Oil and oil seeds, ivory, and rubber are the chief exports of Central Africa. The amount of these products is constantly decreasing, because of the reckless way in which the sources of supply are destroyed. This is especially true of ivory, as the elephants are killed faster than they can increase.

Owing to unstable governments in the past, the absence of roads, and transportation by caravans and porters, the development of Central Africa has been very slow.

Lagos, in Nigeria, is one of the chief ports. It has a large trade in palm-oil. *Loanda*, in Angola, is the second port in importance.

XCI. SOUTH AFRICA

Climate and Surface. South Africa, the northern portion of which really lies in the tropics, includes *German South-west Africa*, and *British South Africa*. The climate of the extreme southern portion of Africa is temperate, and in many ways like that of the United Kingdom.

Throughout southern Africa the highlands close to the coast rise abruptly, so that any damp winds quickly lose their moisture, and the interior receives little rainfall.

The rolling surface of the land in the grazing district of South Africa.

On the east the Kwathlamba Mountains (Drakenberg) slope down on the west to the interior plateaus, which lie at an altitude of about 2,000 feet. They cut off the moisture and the rains brought by the south-east trade-winds, and hence the table-lands of the interior are subject to drought.

In the western portion, lying in the lee of the mountains and plateaus, is the *Kalahari Desert*. In the south-west are table-lands from two to three thousand feet in altitude, rising above the sea in terraces, and known as the *Great* and the *Little Karroo*.

A native Kraal or village in the plateau region.

People. The white people of Cape Colony (Cape of Good Hope) are of three nationalities. The earliest European settlers were the Dutch or Boers, who came to the country about the middle of the seventeenth century. A large immigration of French Huguenots took place toward the end of the same century. Colonists from the United Kingdom entered the country after its conquest in the beginning of the eighteenth century. The descendants of the first two now outnumber the colonists of British origin.

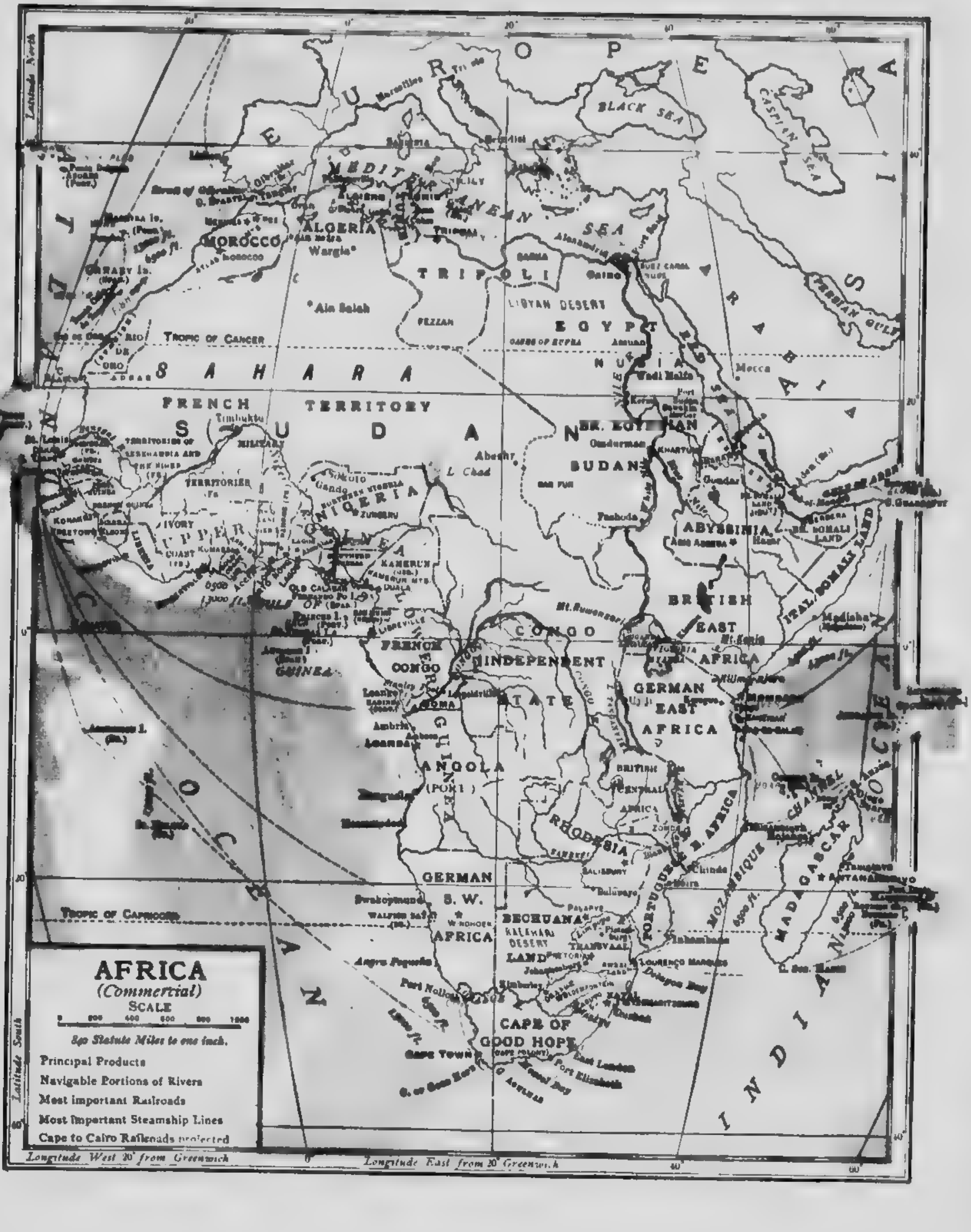
Union of South Africa. The Transvaal and the Orange Free State were settled by Boers who left Cape Colony after it was conquered by the British. The wealth in the mines of the Transvaal caused a large immigration, mostly British. The immigrants, though they invested large sums of money and paid heavy taxes, had practically no share in the government. Dissatisfaction ensued, war followed, the Boers were defeated, and the two republics were declared British Colonies in 1900. In 1909, the four colonies of Cape of Good Hope, Natal, Orange River Colony, and Transvaal, formed a union called the *Union of South Africa*. These four colonies are known as the original *Provinces* of the *Union*, and are called, respectively, *Cape of Good Hope*, *Natal*, *Orange Free State*, and *Transvaal*. Both English and Dutch are official languages. The Legislature of the Union is to meet at Cape Town; but, in all other respects, Pretoria is the seat of government of the Union. The legislative power of the Union is vested in a Parliament consisting of the Governor-General, representing the King, a Senate, and a House of Assembly. The local affairs of each province are managed by an administrator, and a council elected every three years.

Products of the Soil. Along the eastern and southern coasts of South Africa agriculture is carried on. Cereals, fruits, tea, sugar, and tobacco are the chief products.

Stock Raising. In the south-east a large number of ostriches are raised for the sake of their feathers. Grazing, however, is the most wide-spread industry, and sheep and cattle are the chief animals, especially in the Transvaal and Orange Free State. Goats are raised in the harsher climate east of the Great Karroo.

Mineral Products. The Transvaal contains unusually rich gold deposits, which are extensively worked. It ranks next to Australia and the United States in the production of gold. *Johannesburg*, the chief town, is the leading mining centre. *Kimberley* is situated in the midst of extensive diamond fields, and exports more than nine tenths of the diamonds used in the world.

The market square at Johannesburg.


AFRICA
(Commercial)
SCALE
0 200 400 600 800 1000
850 Statute Miles to one inch.
Principal Products
Navigable Portions of Rivers
Most important Railroads
Most important Steamship Lines
Cape to Cairo Railroads projected
Longitude West 20° from Greenwich
Longitude East from 20 Greenwich
Latitude North
Latitude South
EUROPE
ASIA
BLACK SEA
CASPIAN SEA
MEDITERRANEAN SEA
PERSIAN GULF
ARABIA
Mecca
MOROCCO
ALGERIA
TRIPOLI
EGYPT
Cairo
Alexandria
LIBYAN DESERT
FEZZAN
SAHARA
Tropic of Cancer
FRENCH TERRITORY
SUDAN
Timbuktu
L. Chad
NIGERIA
UPPER GUINEA
LIBERIA
IVORY COAST
KAMERUN
ANG. EGYPTIAN SUDAN
Omdurman
Khartum
Fashoda
ABYSSINIA
BRITISH EAST AFRICA
BR. SOMALI LAND
ITAL. SOMALI LAND
CONGO INDEPENDENT STATE
FRENCH CONGO
LOWER GUINEA
GERMAN EAST AFRICA
ANGOLA (PORT.)
BRITISH CENTRAL AFRICA
RHODESIA
PORTUGUESE E. AFRICA
MOZAMBIQUE CHANNEL
MADAGASCAR
GERMAN S. W. AFRICA
BECHUANA LAND
KALAHARI DESERT
TRANSVAAL
Pretoria
Johannesburg
Kimberley
NATAL
Durban
CAPE OF GOOD HOPE
Cape Town
Port Elizabeth
East London
Tropic of Capricorn
ATLANTIC OCEAN
INDIAN OCEAN

Trade. Owing to the regular coast line, South Africa has few good harbours. Those of *Cape Town*, *Port Elizabeth*, and *Durban* are safe, but the best is that of *Lourenço Marques* on the east coast, in Portuguese East Africa. Railway grades are heavy and transportation costly, because of the interior plateau.

The commerce of South Africa is practically limited to the United Kingdom. Gold is by far the most important export; diamonds, wool, angora hair, and ostrich feathers are the other important commercial products.

A view of Delagoa Bay, the harbour of Lourenço Marques, Portuguese East Africa.

XCII. ISLANDS NEAR AFRICA

MADAGASCAR

Surface and Industry. *Madagascar*, a large island lying two hundred and fifty miles southeast of the coast of Africa, belongs to France. It is mountainous throughout, is well watered, and is abundantly supplied with grass. Cattle raising is the leading industry. Gold, rubber, cattle, and raffia are the chief exports. *Tamatave* is the only good port.

MAURITIUS AND RÉUNION

Ownership and Products. *Mauritius*, belonging to the United Kingdom, and *Réunion*, belonging to France, are two small islands east of Madagascar. They are both covered with tropical plantations producing a large amount of sugar.

ISLANDS OF THE ATLANTIC

Ownership and Products. Of the islands on the west coast of Africa, the *Azores*, the *Madeira*, and the *Cape Verde* belong to Portugal. The Azores produce oranges and pineapples; the Madeira, wine and fruit. The Cape Verde Islands are unimportant, except that the Island of St. Vincent is a coaling station for Atlantic steamers. The *Canary Islands* belong to Spain, and produce early vegetables for the London market. *St. Helena*, best known as the place of imprisonment of the great Napoleon, is a British coaling station.

A street bazaar, Tamatave, the port of Antananarivo, Madagascar.

SUMMARY

Africa, owing to its unfavourable climate and the difficulties encountered in travel, is the least progressive and the least developed continent. Only the coastal areas of the more temperate regions are occupied by Europeans, and European influence has had but little effect on this continent. Its commerce is not very important and amounts to only one tenth of that of the world. The most progressive regions are in the temperate areas of the south. The inhabitants of the rich tropical regions are chiefly primitive people, who live on the natural resources of the country, and who contribute little to the world's commerce, except ivory, skins, gums, etc.

The framework of a native hut in South Africa.

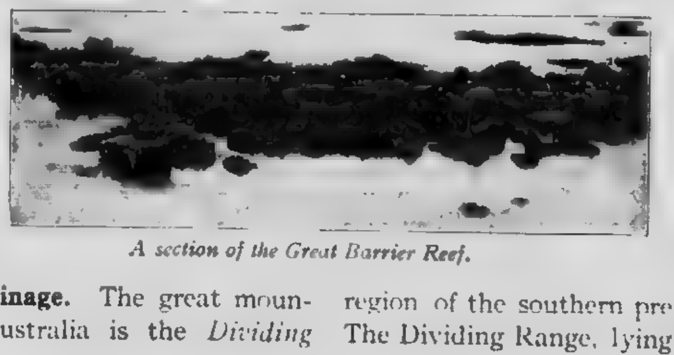
AUSTRALIA AND THE ISLANDS OF THE PACIFIC

XCIII. AUSTRALIA

Size and Situation. The continent of Australia, a British colony, is a little smaller than Canada. It lies entirely in the subtropical and the temperate regions, and is the only considerable land mass in the water hemisphere.

Coast-line. The shore line of Australia is regular, with few indentations; as a result the continent has few good harbours. Vessels proceeding along the wind-swept eastern coast are protected by the *Great Barrier Reef*, which extends along the north-eastern shore for more than twelve hundred miles. This reef, which is of coral formation, is from twelve to fifteen miles off shore, and in places is a hundred miles wide. The channel of deep water is so narrow and tortuous, that sailing vessels rarely use the inside passage. If they do use it, they are obliged to anchor at night.

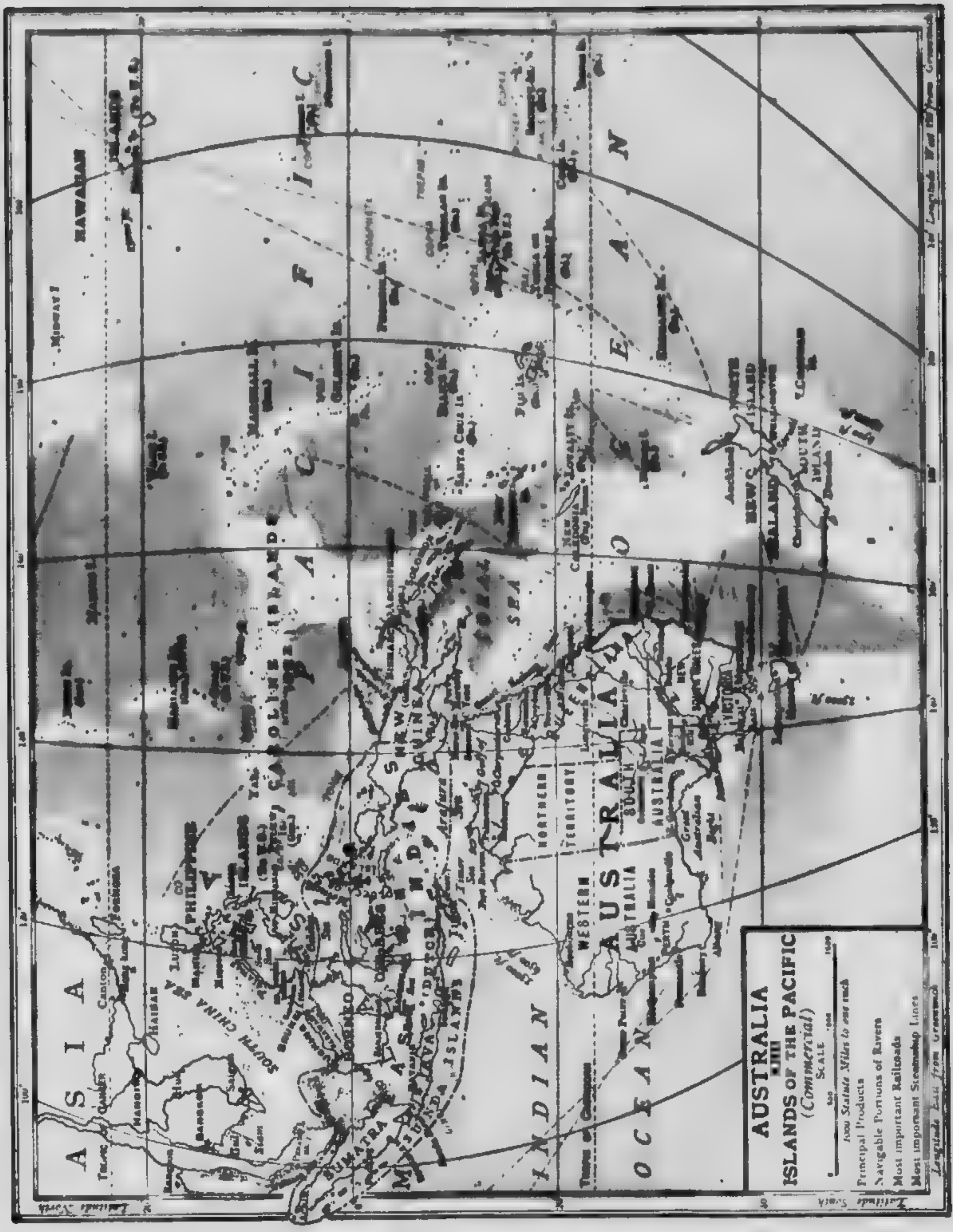
Australia, showing its position in the water hemisphere far from any other continent.



A section of the Great Barrier Reef.

Surface and Drainage. The great mountain system of Australia is the *Dividing Range* along the eastern and south-eastern coast. This range is low in places, but attains high altitudes in the south-east, where peaks, known as the *Australian Alps*, rise over 7,000 feet. The Dividing Range separates the interior plain from the coastal valleys, and contains the head-waters of the only considerable river of Australia, the *Murray*, with its tributary, the *Darling*. The Murray River is navigable at certain seasons for 1,700 miles. The western portion of Australia is a plateau about a thousand feet high, from which during times of rain a few short rivers flow into the Indian Ocean. The greater portion of the interior is an undulating plain containing many salt basins and short streams of interior drainage.

Climate. During December and January, Australia lies entirely in the southern trade-wind belt, but in June and July the southern part is in the region of the southern prevailing westerlies. The Dividing Range, lying on the windward


AUSTRALIA
ISLANDS OF THE PACIFIC
(Commercial)
SCALE
1000 Statute Miles to one inch
Principal Products
Navigable Portions of Rivers
Most important Railroads
Most important Steamship Lines
Longitude East from Greenwich
Longitude West from Greenwich
Latitude North
Latitude South
ASIA
SOUTH CHINA SEA
PHILIPPINE ISLANDS
BORNEO
SUMATRA
JAVA
CELEBES
NEW GUINEA
CAROLINE ISLANDS
MARSHALL IS.
HAWAIIAN
Midway I.
INDIAN OCEAN
PACIFIC OCEAN
CORAL SEA
Arafura Sea
Timor Sea
AUSTRALIA
WESTERN AUSTRALIA
NORTHERN TERRITORY
SOUTH AUSTRALIA
QUEENSLAND
NEW SOUTH WALES
VICTORIA
TASMANIA
Great Australian Bight
NEW CALEDONIA
NEW ZEALAND
NORTH ISLAND
SOUTH ISLAND
Santa Cruz Is.
Fiji Is.
Tropic of Capricorn
Canton
Hong Kong
Manila
Saigon
Bangkok
Singapore
Perth
Adelaide
Melbourne
Sydney
Brisbane
Auckland

side of the continent, has an important influence upon the rainfall. The trade-winds lose most of their moisture in this range, and after crossing the mountains descend into the interior as drying, warming winds.

The rainfall along the eastern and the northern coasts is a little more than forty inches a year, while over large sections of the interior it is less than five inches a year; this region is, therefore, a desert.

During the southern summer, which reaches its height in January, the winds blow in toward the continent from nearly all directions, and the interior at that season is extremely hot. The average temperature of the interior in January is more than ninety degrees Fahrenheit. In winter the winds blow out from the continent, as they do in Asia, and for that reason the interior at that season has a temperature of between fifty and seventy degrees Fahrenheit.

The south-eastern and southern coasts have no frost at sea-level, and thus the growing season in those districts is long. During the prevalence of the westerly winds south-western Australia and the island of Tasmania receive some rain.

The harbour of Sydney, New South Wales.

Vegetation. As in other continents the distribution of vegetation in Australia is determined largely by the surface and the climate. The northern coastal area is occupied by tropical forests and savannas; and almost all the area of the interior by steppes and deserts.

The eastern steppes are covered with grass and contain some oak forests; it is here that sheep are raised in great numbers. The sheep find an admirable food in the long kangaroo grass which becomes rank during the growing season and dries on the stalk. In the dry regions there is much "salt bush," as the characteristic vegetation is called. The salt bush makes an excellent sheep food, and the wool from sheep raised in this region is especially fine.

The continent is particularly rich in ferns and in tall forest trees, of which the eucalyptus, whose straight, slender trunks often grow to a height of more than four hundred feet, is the best known.

Animals. The wild animals of Australia all belong to the Australian region, and have already been described. The common domestic animals of Europe have been extensively introduced, and are of great importance. Rabbits, which were first brought into the Commonwealth for pets and for food, have run wild, and have so increased in numbers that they are now pests.

People. In 1788, because of the crowded condition of English jails, a shipload of convicts was sent to Botany Bay and a settlement formed at Port Jackson. Every year more convicts were sent out. Free settlers also came and after a time the transportation of convicts ceased. Later, gold was discovered and vast numbers of immigrants rushed in. To supply their needs grain and sheep were raised. As population increased, districts were set apart as separate colonies; these prospered under local government. Common interests created a desire for closer union, and the colonies together with Tasmania united in 1901 to form the *Commonwealth of Australia*, with a government somewhat similar in form to that of Canada

These colonies are now called *states*. Ninety-five per cent. of the people are British born or of British descent and their characteristics are those of the parent race.

Products of the Soil. The valuable products of the soil are nearly all derived from animals and plants introduced by the Europeans. The native animals are of little value. The greatest wealth of Australia is in its flocks of sheep. The merino wool, especially that from the grassy region of the Murray and its tributaries, is among the finest in the world.

The most important agricultural regions of Australia are *South Australia* and *Victoria*. Wheat is the chief crop in the temperate sunny south. Sugar-cane is the leading crop of *Queensland* and northern *New South Wales*; these states also produce bananas, oranges, and tropical products.

Irrigation is practised very extensively in north-western *Victoria*; where the water is drawn from the Murray River. In the irrigated regions valuable crops of oranges, figs, apricots, plums, and tobacco are raised. There are some agricultural areas scattered through *Western Australia*.

Melbourne, Victoria. The industrial part of the city lies across the water.

Mineral Products. Gold, discovered in 1851, is the chief mineral product of Australia. It is found in Queensland, New South Wales, Western Australia, and Victoria. Silver occurs and is mined chiefly in New South Wales and Queensland. Copper, tin, coal, and iron abound. Coal is mined in New South Wales. Pearls are found off the western coast, and pearl-fishing is carried on in the coast waters of Western Australia.

Trade. Australia is deficient in means for interior communication. There are few highways, and most of the railways are confined to the areas of somewhat dense population along the south-eastern and eastern coasts. The leading towns are connected by a number of narrow-gauge roads with the gold, silver, and copper mines of the mountains.

Wool and gold are the chief exports. The imports are chiefly textiles and manufactured iron and steel. More than one half the trade is with the Mother Country.

Cities. Owing to the distribution of the rainfall, all the large towns are on or near the sea-coast. By far the largest part of the imports and exports of Australia go through *Melbourne*. It has an excellent harbour, well equipped with docks, shipyards, and the other necessities for carrying on commerce.

The second commercial city of Australia is *Sydney*. It has a fine harbour, and is the terminus of most of the oceanic mail routes. Melbourne and Sydney are well situated for trade, because they are within easy reach of the principal agricultural regions of Australia.

Adelaide, the third commercial city in importance, has a poor harbour, and has been losing ground since the completion of the railway connecting it with Melbourne.

Hobart, the capital of the state of Tasmania, is picturesquely situated on a fine harbour, and is the only town of importance on the island.

XCIV. NEW ZEALAND

Situation and Coast-Line. The Dominion of New Zealand, consisting of three main islands and many smaller ones, is situated more than a thousand miles south-east of Australia. Its area is less than half that of Ontario. In the south-west there are many beautiful fiords, which form fine harbours. These harbours are of little value, however, because they have no good connection with the productive country east of the mountains. The important seaports of this British colony are on the east coast.

Surface. The surface of New Zealand is in many parts very mountainous. The mountains near the western coast of South Island, known as the *Southern Alps*, rise to an altitude of 12,350 feet, and are covered by forests and glaciers.

The only extensive lowland of New Zealand is the broad plain extending along the central eastern coast of South Island. It is composed largely of arable land, and on the west merges into the mountain slopes, which, from their position on the leeward side of the mountains, are bare. Forests which produce timbers of value are found on the western slopes of these mountains.

In the Alpine district of South Island, famous for its scenery.

Climate. New Zealand lies in the region of the "roaring forties," and is therefore swept by strong winds. The rainfall, which is more than forty inches a year, is heaviest on the west side. The climate on the whole is warmer than that of England.

People. British colonists are planting the plains, hewing farms out of forests, turning valleys into dairy pastures, and hillsides into sheep-walks. State construction and management of railways, telegraphs, and telephones; state provision for old age pensions; special land and labour laws show that they are bold experimenters in socialistic legislation.

Products. The agricultural products of New Zealand are similar to those of England; wheat, barley, and oats are the most important. Large portions of the islands are occupied by rich pastures which support great numbers of sheep, cattle, and horses. The deposits of gold are extremely rich.

Trade; Cities. Nearly three fourths of the trade of New Zealand is with the United Kingdom, and the rest is practically all with Australia and the United States. The chief exports are various products of the grazing industry.

New Zealand sends to the United Kingdom enormous quantities of the best frozen mutton received there. Horses, cattle, and butter are sent to New South Wales.

Auckland, the largest town, is important as a coaling station for vessels plying between Sydney and San Francisco. The next city in rank is *Wellington*, the capital.

XCV. THE ISLANDS OF THE PACIFIC OCEAN

The Pacific Ocean is dotted with a great number of single islands and groups of islands, most of which are on the western side.

Ownership; Products. The larger number of the islands of the Pacific belong to Germany, France, the United Kingdom, or the Netherlands, or are under the protection of these governments. Most of them are of coral formation, many are volcanic, and others are both volcanic and coral. The chief products are tropical in nature, and include bread-fruit, cocoa-nuts, sugar-cane, nutmegs, and pepper.

MELANESIA

Melanesia, meaning the *Islands of the Blacks*, includes the Solomon Islands, the New Hebrides, New Caledonia, and the Bismarck Archipelago. It is inhabited mostly by Papuans.

POLYNESIA

Characteristics and People. The small islands lying east of the longitude of New Zealand are known as *Polynesia.* They are inhabited mostly by black or brown people, and are almost all within the tropics. Many are surrounded by coral reefs, so that the offshore lagoons form good harbours. Breadfruit is produced throughout the region and forms the chief food of the people.

A mother and children in the Fiji Islands.

Surface and Climate. The most important islands are the *Fiji* and *Samoan* groups.

The Fiji Islands lie in the south-east trade-wind belt, and their mountain slopes, rising more than 4,000 feet above the sea, have an abundant rainfall. The scenery is grand. These islands form a calling port for vessels crossing the Pacific, and are of some importance in commerce. They belong to the United Kingdom.

Carriers in the Fiji Islands.

The Samoan Islands are similar to the Fiji Islands in climate and surface features. They belong to Germany, except *Tutuila* and the other islands east of the parallel of 171 degrees which belong to the United States. Tutuila is small and of little importance, except for the harbour and coaling station of *Pago-Pago.*

Products; Trade. The chief products of the Fiji Islands are tropical fruits and sugar-cane, though in consequence of the introduction of cattle, grazing products are increasing. Turtle, pearl shells, and fish are secured along the coast. The trade is principally with the United Kingdom and Australia, from which machinery, cotton goods, and hardware are imported.

SUMMARY

Australia is the smallest and the most symmetrical continent. The climatic features are regularly distributed, because the continent lies for a large part of the year in the region of the trade-winds. The distribution of rainfall is strongly influenced by the distribution of the surface features; it is greatest on the windward slopes of the highlands, and least in the low plains of the interior. The climate and surface are both favourable to grazing, so that this industry is the best developed. Australia has about two per cent. of the commerce of the world, of which one half is with the United Kingdom. The Commonwealth is increasing rapidly in importance, and is one of the most valuable and progressive colonies of the United Kingdom.

XCVI. THE BRITISH EMPIRE

The British Empire consists of the United Kingdom of Great Britain and Ireland, the Empire of India, and a number of Dominions, Colonies, Protectorates, and Dependencies in different parts of the world.

Extent and Population. This is the largest empire on the globe. Its area is over eleven millions of square miles, and its population more than 400 millions. It comprises one fifth of the land on the earth, and more than one fourth of the people. A considerable part of this immense territory is unexplored and much of its resources are yet undeveloped. It is an empire that stretches over all latitudes and longitudes, and upon which the sun never sets. It has every kind of climate, from equatorial heat to polar cold, and is inhabited by peoples of almost every race, religion, and colour. Wherever British control has been exercised, the benefits of civilization have been experienced.

Commerce and Trade Routes. The British Empire trades with all countries; a large part of the commerce is carried on within the empire itself. More than twelve million tons of shipping sail under the British flag. The

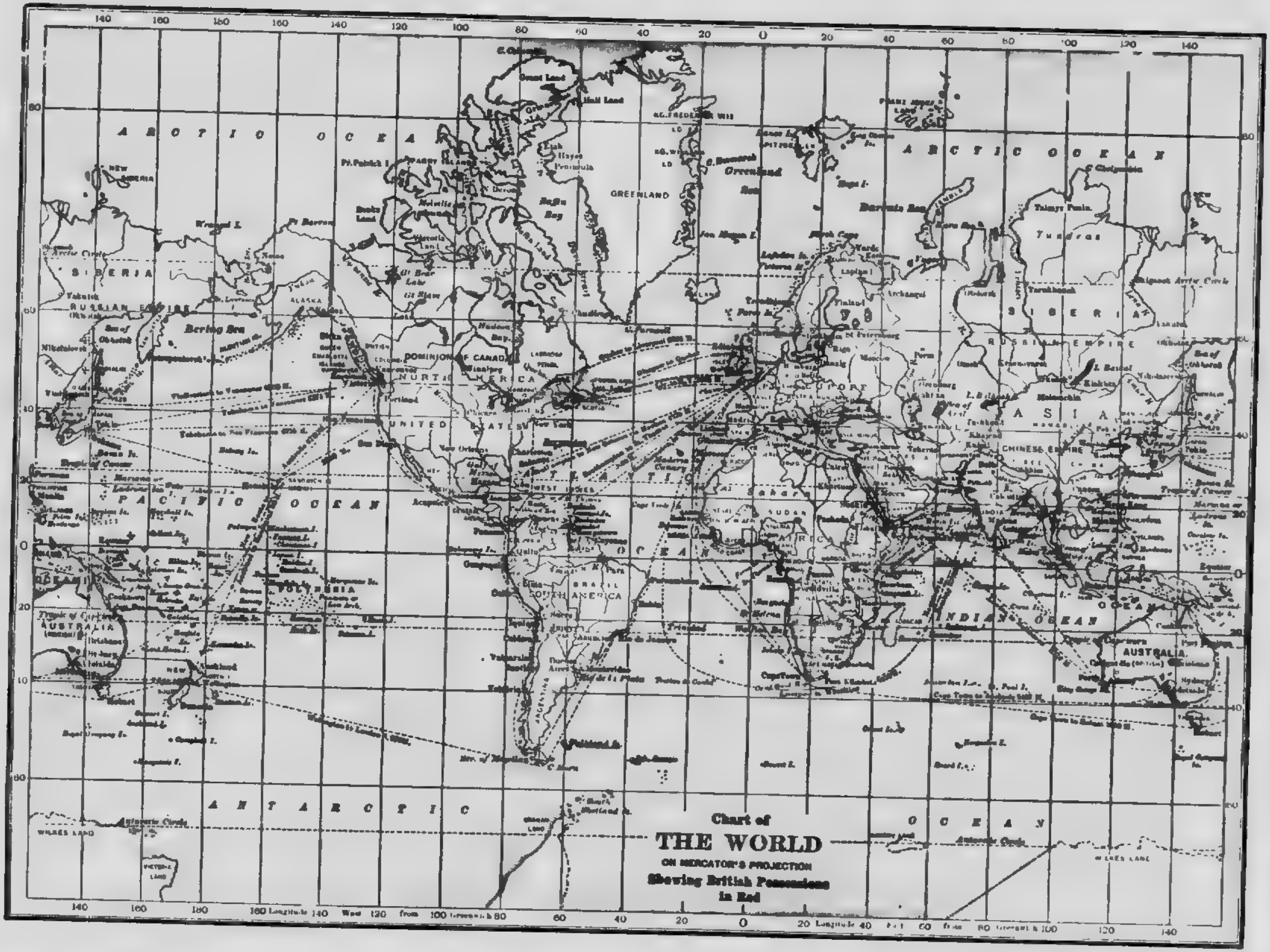


Chart of

THE WORLD

ON MERCATOR'S PROJECTION

Showing British Possessions in Red

ocean serves as a great highway connecting the different scattered parts of the empire together. Swift ocean steamships ply between its different divisions, and carry the surplus products of one to another. Submarine cables connect the outlying parts with one another and with the British Isles. It is now possible to send a message round the world by cables touching only on British soil.

The trade within the empire itself naturally follows certain routes, of which the following are the chief:

(1) From the British Isles across the Atlantic to Canada.

(2) From the British Isles across the Atlantic Ocean to Canada, across Canada and the Pacific Ocean to Hong Kong, Singapore and India, or Australia and New Zealand. This is the most rapid route between the United Kingdom and the East.

(3) From the British Isles to the East by way of Gibraltar, the Mediterranean, Suez Canal, Red Sea, and Indian Ocean to India or Australia.

(4) From the British Isles to the East by way of the Atlantic, round the Cape of Good Hope, and thence to India or Australia.

(5) From the British Isles across the Atlantic, round Cape Horn, and through the Pacific to New Zealand, Australia or Hong Kong.

(6) From the British Isles to the West Indies, Honduras, and Guiana. The canal across the Isthmus of Panama will make a new route to New Zealand and Australia.

(7) From Canada to the West Indies.

To protect the empire and its commerce, Britain maintains a great navy and has established coaling stations and constructed dry-docks for the repairing of ships at various strategic points throughout the world. In this way, every steam-vessel is within a few days' sail of a supply of coal and of a place where repairs can be made. Much of the coal is shipped from the Mother Country, but vast supplies are also found in Nova Scotia, British Columbia, India, South Africa, New Zealand, and Australia. Dry-docks have been constructed at Gibraltar, Malta, Bombay, Calcutta, Hong Kong, Sydney, Auckland, Bermuda, Halifax, and Esquimault.

Government. There are three classes of colonies:

(a) Colonies wherein both the legislative and executive powers are vested in officers appointed by the Home Government, i. e., the Government of the United Kingdom. These are known as *Crown Colonies.* Gibraltar, St. Helena, Ceylon, Trinidad, Sierra Leone, and India are examples.

(b) Colonies which have *representative institutions.* The Home Government appoints and controls the chief public offices. There is, however, a legislative body wholly or partly elected, but upon whose legislation the Home Government exercises a veto power. Malta, Jamaica, and British Guiana are examples.

(c) Colonies which have *responsible government.* These have their own parliaments and their own executive officers. The Home Government appoints the Governor-General. Its policy is to allow the colonies the utmost freedom in matters of government, except where they affect the Empire as a whole, and even then the veto is rarely exercised. The Dominion of Canada, the Commonwealth of Australia, and the Union of South Africa are examples. Self-governing Colonies are represented in London by appointed agents.

Protectorates are countries which, with regard to their foreign relations, are under the exclusive control of the King. British Central Africa, Uganda, and Nigeria are examples.

THE CONSTITUENT PARTS OF THE BRITISH EMPIRE OUTSIDE THE UNITED KINGDOM

I. IN EUROPE

Gibraltar. The rock of Gibraltar, which was taken from the Spaniards in 1704, is a strong fortress and coaling station at the entrance to the Mediterranean Sea, near the southern extremity of Spain. Its area is about two square miles. It has an inclosed harbour and three graving-docks capable of accommodating the largest battleships in the British Navy. It is a Crown Colony, with the Commander of the garrison as Governor.

Gibraltar.

Malta. A strongly fortified island in the Mediterranean Sea, seventeen miles long and nine wide, with an area of 92 square miles, was taken from the French in 1800. The colony includes the adjoining islands of *Gozo* and *Comino*. It is about half-way between Gibraltar and the Mediterranean entrance to the Suez Canal. The principal harbour is one of the finest in the world, and has graving-docks to accommodate the largest sized battleships. The capital is Valetta. The government is administered by a governor aided by a council, part of which is elected.

II. IN ASIA

The Indian Empire. This empire includes all the territory south of the Himalayas and also Burma, Baluchistan, the Andaman, Nicobar, and Laccadive groups of islands, Aden and its dependencies, Perim, Sokotra, and the Kuria Muria Islands, and the Bahrein Islands.

India is very densely peopled; for while its area is not quite half that of Canada, its population is almost equal to that of North America, South America, and Africa together. There are many nations and peoples speaking different languages in India. It is as incorrect to think of it as a single nation as it would be to think thus of the continent of Europe. There are also many religious sects in India — Hindus, Mohammedans, Buddhists, and many others — all disliking one another. Thus the people of India are not united in blood, or language, or religion. Such divisions have always prevailed. By the use of them the East India Company, which began trading there in 1600, acquired territory and influence. This company gradually increased its power until 1858, when the government of the country was transferred from the Company to the Queen of England. In 1877 the Queen became Empress of India, and the present king of England is Emperor of India.

British enterprise has done much for the country. Irrigation canals have been constructed and railways built so that a season of drought no longer causes famines. More than 30,000 miles of railway are now open, and good roads have been constructed everywhere.

To understand how the country is governed, it must be remembered that the whole country is divided into two parts, British Territory and Native States. The British territory is entirely under the control of the government of the United Kingdom. It is subdivided into a num-

The harbour of Aden, with a group of natives in characteristic posture.

ber of provinces, as Bengal, Bombay, Madras, Punjab, Burma, etc. Over all is the Governor-General, and over each province there is a governor appointed by the British Government. There is no parliament to make laws, as in Canada,—these are made by men appointed to their posts. In the Native States the laws are made by native princes, assisted by British agents.

Burma, the largest province of the Indian Empire, was annexed after the Burmese war of 1883-1886. It lies between Eastern Bengal and Assam, and the Bay of Bengal on the west, and China, French Indo-China, and Siam on the east. It is a mountainous country, with immense forests. The capital is Rangoon. The chief exports are rice and teak.

The Andaman Islands lie in the Bay of Bengal. Since 1858 they have been used by the Indian Government as a penal settlement. Port Blair, the capital, has a fine harbour. The chief export is lumber.

The Nicobar Islands were occupied by the British in 1869. The chief product is cocoa-nuts.

Hindu pilgrims at a bathing place on one of the sacred streams.

The Laccadive Islands are a group of small coral islands, 200 miles west of the Malabar coast of Madras Presidency, in which they are included.

Baluchistan comprises the country along the Arabian Sea from Persia to the Punjab. It is an important outlying defence for India. British troops occupy Quetta, which commands the Bolan Pass. It was considered an independent state until 1876. Since that time various parts have been added to the Indian Empire.

Aden, a strongly fortified coaling station at the southern extremity of Arabia, has an area of 80 square miles, and is the key to the Red Sea. It was occupied by the British in 1839. It is a part of the Presidency of Bombay.

Perim, is a small island used for a lighthouse since 1857, and for coaling purposes; the Kuria Muria islands, and Sokotra, an African island, annexed to the Empire in 1886, are, like Aden, under the control of the Government of Bombay.

The Bahrein Islands, a group of islands in the Persian gulf, have been a British protectorate since 1875. The commercial centre and capital is Manameh. The chief export is pearls.

Ceylon, a large island about half the size of England and Wales, lies 60 miles south of Hindustan. It was taken from the Dutch in 1796. It is noted for its pearl-fisheries. Its chief exports are tea, cocoa-nut products, and plumbago. It is a crown colony, with Colombo as capital

The Maldive Islands, a group of coral islands, 500 miles west of Ceylon, is a dependency of Ceylon.

Cyprus, the third largest island in the Mediterranean Sea, is nominally a part of the Turkish Empire, but was ceded to the United Kingdom in 1878 as a guarantee against further Russian aggression in Asia Minor. It is administered as a Crown Colony. Its capital is Nicosia. Its chief exports are oranges and lemons, raisins and wine, wheat and barley, wool and hides.

The Straits Settlements. The crown colony of the Straits Settlements consists of a number of separate parts — Singapore, Penang, Malacca, Christmas Island, Labuan, etc. The capital of the Settlements is Singapore, a very important, strongly-fortified shipping port, which was ceded to the United Kingdom in 1824. It commands the commercial channels to the East Indies, China, and Japan. Tin is an important export.

The Federated Malay States are situated on the mainland of the Malay Peninsula. They form a protectorate of the United Kingdom.

British North Borneo, *Brunei*, and *Sarawak*, are three British protectorates in the Island of Borneo which were acquired in 1840. British North Borneo is about as large as Ireland. South of this protectorate, along the west coast is Brunei, with an area of about 3,000 square miles, and south of Brunei is Sarawak, a country about as large as England. The products are pearls, oysters, sponges, and fish from the sea, and timber for cabinet work from the forests. Coal is abundant, and gold mines are worked. Spices, rubber, sago, and camphor are the chief exports.

Labuan, an island 30 miles in area, off the north-west coast of Borneo, was ceded to the United Kingdom in 1846 by the Sultan of Borneo. It has a fine harbour and extensive coal-mines.

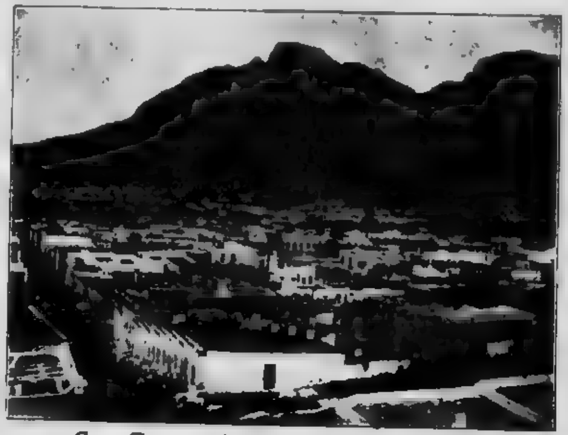
Hong Kong, a crown colony, consists of an island 30 square miles in area, situated at the mouth of the Canton River, which was ceded to the United Kingdom in 1842, and a small peninsula on the mainland, which was acquired in 1861. Victoria, the capital, is one of the greatest trade centres of the world. It is also a great military and naval station, being called the "Gibraltar of the East." It has dry-docks capable of holding the largest vessels.

Wei-hai-wei comprises a number of small islands and a strip of territory on the Shantung Peninsula in China, 10 miles wide. It was leased to the United Kingdom in 1898 by China, and is a British naval station. The territory is administered by the Admiralty.

III. IN AFRICA

British South Africa. This vast territory extends from the Indian Ocean on the south to the Congo Independent State on the north, and from German South-West Africa and Angola on the west to the Indian Ocean, and Portuguese East Africa on the east. It comprises the *Union of South Africa*, *Basutoland*, *Bechuanaland*, and *Rhodesia*.

The Union of South Africa. This consists of the four provinces now called *Cape of Good Hope* and its dependencies, *Natal* and its dependencies, *Orange Free State*, and *Transvaal*.



Cape Town at the foot of Table Mountains.

Cape of Good Hope was acquired in 1806 by conquest from the Dutch. Its area is 277,000 square miles. Wheat, oats, and barley are grown. Sheep, cattle, and ostriches are raised, and diamonds and gold are extensively mined. The capital is Cape Town.

Natal lies along the east coast from Cape Colony to Portuguese East Africa. Its area is about 36,000 square miles. The soil is fertile. Sugar, coffee, and tea are grown. Sheep-rearing is an important industry. Coal is extensively mined and exported. Pietermaritzburg is the capital and Durban the only port. A small party of Englishmen formed a settlement here in 1824; in 1856 it became a separate colony and in 1909 entered the South African Union.

Orange Free State has an area of about 50,000 square miles. Its capital is Bloemfontein. The chief industry is raising cattle and sheep. Diamonds are found, and rich coal-mines exist. The chief exports are wool, ostrich feathers, hides and diamonds. It was annexed to the British Crown in 1900.

Transvaal lies between Portuguese East Africa on the east, and Cape Colony and Bechuanaland Protectorate on the west, and between Orange Free State on the south, and Rhodesia on the north. Its area is 111,000 square miles. In the main it is a stock-raising country, but it is very rich in minerals, of which gold, coal, and diamonds are the chief. The capital is Pretoria. It was annexed to the British Crown in 1900.

Rhodesia, named after the late Cecil Rhodes, is a large territory extending from Transvaal northward to Nyasaland, and from Portuguese East Africa westward to Portuguese West Africa, or Angola. Its area is about 440,000 square miles. The whole territory is administered by the British South Africa Company, under royal charter dated 1889. The political capital is Salisbury, and the commercial centre is Bulawayo. The country produces gold, silver, copper, coal, diamonds, and other minerals. Tobacco, rubber, cotton, and all kinds of grain do well.

Basutoland, a Crown Colony since 1884, is surrounded by Cape Colony, Natal, and the Orange River Colony. It is a well-watered plateau, on which fine wheat is grown and large numbers of cattle raised.

Bechuanaland, a protectorate since 1885, lies between Cape Colony on the south, and the Zambesi River and Rhodesia on the north, and between the Transvaal on the east and German South-West Africa on the west. Its area is about 275,000 square miles. Cattle-rearing and agriculture are the chief industries.

BRITISH WEST AFRICA

British West Africa comprises the Gambia Colony and Protectorate, Sierra Leone Colony and Protectorate, the Gold Coast Colony with Ashanti and Northern Territories, Southern Nigeria Colony (Lagos) and Protectorate, and Northern Nigeria Protectorate.

Gambia, a small crown colony and protectorate of about 4,000 square miles, lies on both banks of the Gambia River. Its capital is Bathurst. The chief export is ground-nuts, which are sent chiefly to Marseilles. It was seized as a trading post in the latter part of the seventeenth century.

A street bazaar on the Nile above Cairo.

Sierra Leone. The crown colony of Sierra Leone and the Protectorate lie between Liberia and French Guinea. The area is about 34,000 square miles. The capital is Freetown, which has the best harbour on the West African coast, and is used as an imperial coaling station. The exports include palm-oil, palm-kernels, cola-nuts, and india-rubber. Sierra Leone was ceded to Great Britain in 1787 by the native chiefs.

Gold Coast Colony, a crown colony, stretches for 334 miles along the north shore of the Gulf of Guinea, between French Ivory Coast and German Togoland. The area of the colony and adjacent protectorate is about 82,000 square miles. The chief exports are gold, rubber, palm-oil, cocoa and mahogany. The climate is hot, damp, and unhealthy. The capital is Accra. This colony was acquired by settlement from 1618 onward and by conquest.

Southern Nigeria. This colony and protectorate lies between Dahomey on the west and Cameroon on the east. It includes the colony and protectorate of Lagos. Area about 77,000 square miles. The capital is Lagos. Cotton, maize, palm-oil, ivory, gum, rubber and mahogany are exported.

Northern Nigeria, a protectorate established in 1900, lies between Southern Nigeria on the south and the French possessions on the north. The area is about 256,000 square miles. It exports palm-oil, rubber, ivory, ground-nuts, ostrich feathers, and tin.

IV BRITISH EAST AND CENTRAL AFRICA

A portion of the continent north of Natal, both on the coast and inland, is under British protection, and is administered directly by the Home Government. This territory comprises the Protectorates of *East Africa*, *Uganda*, *Nyasaland*, formerly known as British Central Africa, *Zanzibar*, and *Somaliland*.

The East Africa Protectorate with an area of 177,000 square miles, extends along the coast from German East Africa to Italian Somaliland, and inward to the Uganda Protectorate, the Belgian Congo, and the Egyptian Sudan. It exports rubber, ivory, and hides. The climate is healthful and the soil fertile. The capital is Nairobi. Mombasa, the chief town, possesses a fine harbour. This Protectorate was acquired by treaties with African chiefs and with the Sultan of Zanzibar.

Uganda Protectorate lies to the north-west of Lake Victoria, and reaches to Lake Albert. Its area is about 117,000 square miles. It exports ivory and skins It was proclaimed a Protectorate in 1894.

Zanzibar Protectorate consists chiefly of two islands, Zanzibar and Pemba, off the coast of German East Africa. The soil is fertile. The chief exports are ivory, cloves, and rubber. The city of Zanzibar has a fine harbour and an extensive commerce. It has been a Protectorate since 1890.

The Port of Suez, an important commercial distributing point.

Nyasaland Protectorate, which until 1907 was known as British Central Africa, lies west of Lake Nyasa. Blantyre is the chief town. The exports are coffee, cotton, tobacco, and ivory. It was proclaimed a Protectorate in 1891.

The Somaliland Protectorate lies along the coast of the Gulf of Aden. Its area is about 68,000 square miles. It exports hides, ostrich feathers, gum, cattle, and sheep. The chief town is Berbera. In 1884 a Protectorate was declared over a part of Somaliland.

Egypt, while nominally a dependency of Turkey, is, since 1883, in reality a protectorate of the United Kingdom. A British army of 5,000 is maintained in the country. Agriculture is the one great industry of Egypt, and cotton, wheat, rice, and sugar are the staple crops. Cairo, the largest city in Africa, is the capital.

Mauritius, an island of volcanic origin in the Indian Ocean, 500 miles east of Madagascar, has an area of about 700 square miles. It is a crown colony, with representative institutions, and is an important naval station in the East. Sugar is the great export. The capital is Port Louis, on an excellent harbour.

The Seychelles Islands, a group of 89 islands in the Indian Ocean, about 1,000 miles from the African coast, is a crown colony. They were captured from the French in 1794. The capital, Victoria, is an important coaling station with a safe and commodious harbour. The chief exports are vanilla and cocoa-nut oil.

Ascension, a barren, mountainous island of volcanic origin in the South Atlantic Ocean, is a British naval station. It is now used as a naval coaling station and a sanatorium for sailors. Its government is administered by the Admiralty.

St. Helena, an island of volcanic origin with an area of forty-seven square miles, was taken from the Dutch in 1673. It was to this island Napoleon Bonaparte was banished in 1815. It is a fortified coaling station about 1,200 miles from the west coast of Africa. Its capital is Jamestown.

V. IN AMERICA

The Dominion of Canada. In 1867 the Dominion of Canada was formed of the four original provinces — Upper Canada (Ontario), Lower Canada (Quebec), New Brunswick, and Nova Scotia. In 1869 the North-West Territories were added to the Dominion by purchase from the Hudson's Bay Company, and the province of Manitoba was set apart out of a portion of it, and admitted to the Confederacy in 1870. British Columbia became a part of the union in 1871, and Prince Edward Island in 1873. The provinces of Saskatchewan and Alberta were organized and admitted in 1905.

Newfoundland is the oldest English colony. In 1583 Sir Humphrey Gilbert took possession of the island for Great Britain.

Jamaica, a crown colony, with representative institutions, lies 90 miles south of Cuba. Its area is about 4,000 square miles. It is hilly and mountainous. Its exports are sugar, rum, coffee, and fruits — chiefly bananas and oranges. The capital is Kingston, an important coaling station. *Turks* and *Caicos Islands* are dependencies of Jamaica. Turtles, salt and sponges are exported.

Jamaica was wrested from the Spaniards in 1655, and it was formally ceded to Great Britain by the Treaty of Madrid in 1670.

Leeward Islands. The Leeward Islands, under British control, have an area of about 700 square miles, and form a crown colony with a partly elected legislative assembly. They lie south-east of Porto Rico and north of the Windward Islands. Their chief exports are sugar, molasses, cotton, and fruits. The capital is St. John on Antigua Island. Many of these islands were settled by English families under Sir Thomas Warner between 1623 and 1632.

Windward Islands. These lie between Martinique and Trinidad. They consist of the three crown colonies, St. Lucia, St. Vincent, and Grenada, with the Grenadines. They export sugar, cocoa, spices, and cotton. The area of the group is about 500 square miles. These islands were acquired by conquest from France.

Barbados, the most eastern of the Windward Islands, has an area of 166 square miles. The exports are sugar, molasses, rum, and cotton. It has representative institutions, although not responsible government. Its capital is Bridgetown. It was settled by English colonists in 1625.

Trinidad and *Tobago*, the most southerly of the West Indies, lie close to the coast of South America. The area of Trinidad is about 1,750 square miles. They are a crown colony with Port of Spain as the capital. The chief exports are asphalt, sugar, rum, molasses, and cocoa. Trinidad was captured from the Spaniards in 1797.

Bahama Islands, a chain of coral islands, of which about 20 are inhabited, lie off the south-east coast of Florida. Their area is about 5,500 square miles. Sponge-gathering and fruit-growing are the chief industries. Sponges, pineapples, oranges, and tomatoes are exported. These islands, originally settled by the English from 1629 onwards, are a crown colony with Nassau as capital.

Bermudas, a group of about 360 small islands, of which fifteen or sixteen are inhabited, lie in the Atlantic about 600 miles east of North America. They form an important naval base, with dockyard and victualling establishment. They export onions, potatoes, and lily bulbs. The government is similar to that of Barbados; the capital is Hamilton.

Honduras, a crown colony on the east coast of Central America has an area of about 7,500 square miles. The country, which is flat near the coast and hilly in the interior, is almost a primeval forest. The exports are mahogany and logwood. Belize is the capital. Honduras was taken from Spain in 1798.

British Guiana, a colony with representative institutions, but not responsible government, lies along the north-eastern part of South America. Its area is about 90,000 square miles. Its exports are sugar, gum, and gold. Georgetown is the capital. It was taken from the Dutch and French toward the close of the 18th century and was finally ceded to the United Kingdom in 1814 by the Treaty of Paris.

Falkland Islands, a group of about 100 islands, two of which are of considerable size, lie about 300 miles east of the Strait of Magellan. Their area is about 6,500 square miles. In 1833 they were taken possession of to protect the whale fishery of the Southern Seas. Sheep-farming is the staple industry. The government is that of a crown colony; Port Stanley, the capital, is a coaling station.

Cattle grazing in the rich, level land of Tasmania.

South Georgia, an uninhabited group of islands, south-east of the Falkland Islands, is attached to them.

VI. IN AUSTRALASIA AND OCEANIA

The Commonwealth of Australia. The Commonwealth of Australia was inaugurated at Sydney on January 1st, 1901. It consists of the six original States of New South Wales, Victoria, Queensland, South Australia, Western Australia, and Tasmania. The government is similar to that of Canada. The area of the Commonwealth is estimated at 3,000,000 square miles, and the population at over 4,000,000. The capital is not yet chosen. In the meantime, Melbourne is the seat of government.

Australia and the neighbouring islands were acquired for the Empire by settlement and not by conquest. The first settlement, that at Port Jackson, dates back to 1788.

Dominion of New Zealand. The Dominion of New Zealand consists of three main islands, known as North, South, and Stewart Islands, with several groups of smaller islands, as the Chatham Islands, and the Cook Islands. The area is nearly 105,000 square miles, and the capital is Wellington. The first settlement was made in New Zealand in 1840, at Wellington, on land purchased from the Maoris.

The British Solomon Islands. This group of islands with an area of about 8,500 square miles lies east of New Guinea. They are of volcanic origin. The exports are cocoa-nuts, sweet potatoes, pineapples, and bananas. The Protectorate was proclaimed in 1893.

Fanning Island, a coral island 15 square miles in area, is a station for the submarine cable between Vancouver and Australia.

Fiji, a group of from 200 to 250 islands of volcanic origin, of which about 80 are inhabited, lies 1,100 miles north of New Zealand. The area of this fertile group is about 7,500 square miles. The chief exports are sugar, copra (the dried kernel of the cocoa-nut), and bananas. The capital of this crown colony is Suva. Fiji was ceded by the native king and people to the United Kingdom in 1874.

The Gilbert and Felice groups of islands form a protectorate having an area of about 166 square miles. They are covered with cocoa-nut palms, and hence the chief export is copra.

The New Hebrides is a group of volcanic islands free from coral reefs. Their area is 5,000 square miles. The principal exports are copra, bananas, and coffee. They are under the joint management of British and French naval officers.

Papua, formerly British New Guinea, comprises the southern and south-eastern shores of the island, and some groups of small islands lying near the coast. The area is about 90,000 square miles. The capital is Port Moresby. It became a part of the Empire in 1888 as a dependency of the Commonwealth of Australia.

The Tonga, or Friendly Islands. These islands mostly of coral formation lie east and south-east of Fiji. Their area is about 390 square miles. The protectorate, the capital of which is Tongatabu, was proclaimed in 1899.

XCVII. COMMERCIAL GEOGRAPHY

Out of differences in climate arise differences in the productions of various countries. These differences in productions necessitate exchange of commodities and cause division of labour. Countries sell their surplus products and buy from others what they need but cannot produce profitably. The division of labour tends to make men more skilful in their special callings, and thus to improve the quality, increase the quantity, and decrease the cost of products. This exchange of products is known as *Trade* and *Commerce*.

The prairie provinces of Canada are rich in wheat and cattle, but poor in fruits and manufactures. They sell grain and cattle in eastern markets; buy their fruit from Ontario, British Columbia, and the United States; and import their agricultural implements. The cotton-mills of Ontario, Quebec, and New Brunswick must get from countries which grow cotton, the raw material which they spin into yarn and weave into cloth. Southern Ontario produces no coal, hence it imports this mineral to drive its machinery and heat its homes.

A consideration of the influences affecting the production, transportation, and exchange of commodities gives rise to *Commercial Geography*.

FACTORS OF COMMERCE

Trade and Commerce has been developing for centuries until now it gives occupation directly to millions of people throughout the world, and it is still increasing. The influences which have led to its development are numerous; chief among these are the following:

1. **Civilization.** In primitive times men produced their own food and made their own clothing. Under such conditions there could be no trade in these products. As civilization advanced, human needs increased; men began to devote themselves to special callings; commodities were exchanged, and commerce began to develop.

The average needs of the people of England are now much greater and more varied than they were a thousand years ago. Then England traded with few nations, and these near to her own shores; now, she is the great mart of the world to which the best and richest products are brought from every land and clime. The Japan of to-day uses many times more of the products of other nations than did the Japan of the earlier part of the nineteenth century, and to secure these she has to produce for exchange or sale more of the things needed by other nations. Throughout the world, as civilization advances commerce increases.

2. **Climate.** Where the climate changes as it does in Canada, the effect on transportation is marked. In winter, traffic is almost entirely by railway; in summer, lake and river add greatly to the facilities for transportation. Indeed the commerce on the Great Lakes of Canada surpasses that on any other bodies of water in the world, oceans alone excepted.

3. **Sources of Power.** Time was when mills, foundries, and factories were built near waterfalls and rapids, that these might supply them with power. Next, steam was used to supplement, and then largely to take the place of water-power and wind-power. Now waterfalls and rapids, wind and steam, are used to generate electricity which can be made effective as motive power over long distances. About the Lancashire district in England there is much coal, and the hilly sections have abundant water-power. Here has been developed a great manufacturing centre for the making of iron and steel products, and the spinning and weaving of wool and cotton. Birmingham and Sheffield, Leeds and Bradford, owe their importance to their proximity to the coal-fields, the sources of motive power. Ontario with all her mineral and agricultural wealth, must obtain

her coal from the United States or from Nova Scotia; but she has abundant waterfalls to supply unlimited cheap electric power, which has the further advantage over coal that its sources of supply can never be exhausted. Niagara Falls alone now supplies electric power for industrial and other purposes over an area as large as all England.

4. **Products and Manufactures.** The business of a nation must ultimately depend upon her products and manufactures — upon the products of the forest, the farm, the mine, and the sea; and upon the manufacture of the raw materials, which she produces or imports, into finished articles for home use or export. She must produce wealth in the form of materials needed by other nations, in order to be able to buy from them the things she needs. Canada's agricultural and mineral wealth makes possible an ever increasing trade with other nations.

5. **Government.** When the government of a country is stable, and property safe, capital will seek investment there and, if natural conditions favour, manufacturing will flourish. The steady growth of industries in Egypt under the firm rule of the British is an illustration of this. When a government cannot guarantee protection of life and property, as in some parts of Turkey, trade is crippled and commerce destroyed.

Governments do much to foster commerce by improving harbours, constructing artificial water-ways, erecting lighthouses, charting coasts, and by collecting and distributing information of value to producers and manufacturers.

The educational system of a country has a marked influence upon its trade and commerce. Germany expends large sums of money upon the education of her citizens and the technical training of her artisans; as a result she occupies a leading position commercially among the nations of the world. Education in Russia and Spain has not been assisted generously by the governments of these countries, and their industries have suffered through the ignorance of their working classes.

Governments sometimes encourage trade by grants of money, called *bounties*, to certain industries, e. g., the iron and steel bounties in Canada; and by grants, called *subsidies*, to ocean steamships to secure rapidity in transportation without undue cost to the shipper.

Duties are an important factor in trade and commerce. They are taxes levied by governments upon goods imported from another country, or upon the raw material exported from the home country. Duties serve: (a) to raise money to meet the expenses of government; (b) to protect home industries against foreign competition; (c) to foster the conversion of the raw material into the manufactured product in the country producing it, and thus give employment to many of its own citizens. The Province of Ontario has placed an export duty on saw-logs. As a result, saw-mills are now busy along the north shore of Lake Huron, producing lumber which is largely exported to the United States, while the saw-mills of Michigan are idle for lack of logs to saw. Usually a light tariff or duty is put on raw materials imported for manufacture if these cannot be procured in sufficient quantities at home.

6. **Transportation.** Shipping facilities have an important effect upon trade and commerce. These are: (a) natural — such as rivers, lakes, and sea-coast; and (b) artificial — such as railways, canals, and harbour improvements. Transportation by water is generally cheaper than by land, hence governments have expended large sums to shorten and improve water routes. The cost of loading and unloading goods adds considerably to the cost of transportation, so every possible means is taken to avoid transhipment. For these reasons, Canada has spent large sums in improving its river

and lake navigation by constructing canals, deepening harbours, etc. The St. Lawrence River and the Great Lakes are of immense commercial importance to Canada.

Throughout the world artificial waterways [illegible] numerous; every civilized country [illegible] them. Chief among these [illegible] Welland, Sault, and St. Lawrence [illegible] the Kaiser Wilhelm [illegible] the Imperial Canal in China; [illegible] Panama Canals under the control [illegible] United States; and the Manchester [illegible] Canals under the control of Great Britain.

Canals aid commerce by shortening routes, as in the case of the Suez Canal which lessens the distance by water from England to India by over 5,000 miles; or by overcoming hindrances in natural water-courses, as in the case of the Welland Canal.

There are three kinds of commercial canals: (a) those with *locks* to overcome elevations which would otherwise cause dangerous rapids or waterfalls, e. g., the Sault Canal; (b) canals through a level country lower than the sea at high tide, e. g., the Amsterdam Canal — ships are admitted to these canals through *gates* in the shore dikes, but only when the tide is lower than the land; (c) canals without locks or gates, e. g., the Suez Canal.

7. **Labour and Machinery.** Labour conditions affect production, trade and commerce. Tea grown in America cannot compete in price with tea from China, Japan, or India, because labour in these countries is cheaper than in America. Yet the nation having much cheap labour cannot always undersell the nation paying a high price for labour. The real cost of labour is measured not by the wages paid but by the value of the manufactured product. Skilled labour and labour-saving machinery may so reduce the cost of production as to enable a country where labour is dear to compete in the world's market with other countries where labour is cheap.

At one time labourers regarded machinery as an enemy, but they have found out that it increases production, raises the price of labour, and at the same time lowers the cost of the manufactured article. So long as cotton was spun by women in their homes and woven into cloth on hand-looms, little of it was worn; but when the spinning-jenny was introduced, and subsequently the spinning-mule and the cotton-gin, the cost of its manufacture was so reduced that every one could readily buy it. Cheap labour in a nation, as in India, China, or Russia, means that the great mass of the people are very poor, uneducated, and low in productive capacity. Nations are slowly learning that educated trained labour, working under sanitary conditions for a reasonable number of hours each day, is a most valuable asset and a most important factor in commerce.

8. **Money and Banks.** Money is the medium by means of which commodities are exchanged. Without money trade would be limited to barter or direct exchange, as when the Indians traded their furs at the stores of the Hudson's Bay Company for blankets, guns, and ammunition. So important is money to commerce, that trading in it has become a business in itself. If those who deal in great commercial transactions had to settle their accounts by shipping their own money back and forth throughout the world, as they ship their produce or manufactures, it would be very inconvenient, though less so than trading by barter. To overcome this difficulty the business of banking has been evolved. Banks aid business in many ways. They lend money on the securities of the commodities of commerce and manufactures, issue bank-notes which are more convenient than silver or gold, afford a safe place of deposit for money, and allow men to provide for payment of debts by drawing cheques, buying bank drafts, or

bills of exchange, instead of forwarding silver or gold. For these services they charge a percentage on each transaction. Thus the banks act as receivers and shippers of money for men in business, and do this service far cheaper and better than these men could do it for themselves. Gold and silver, being intrinsically valuable and fluctuating little in price, have supplied commerce with standard currencies of stable value.

9. **Commercial Centres.** These owe their existence to many influences:

(a) *Defence.* In early days suitability for effective defence was an important consideration in selecting a site for a city. Venice, Paris, Montreal, Quebec, Winnipeg, and Edmonton are illustrations of this.

(b) *Position.* Nearness to sources of natural wealth, proximity to trade routes, situation at mouths and confluences of navigable rivers — these have determined the position of many cities. Examples of one or more of these influences are to be found in Montreal, New York, Chicago, Halifax, New Orleans, Pittsburg, Winnipeg, Vancouver, San Francisco, and Dawson City in the New World; and Liverpool, Marseilles, Vienna, Bordeaux, Constantinople, Moscow, and many others in the Old World.

(c) *Head of Navigation.* At the head of navigation vessels discharge their cargoes, and are laden with products for transportation to other places. This furnishes employment for numbers of people at that point, and so a settlement is formed which is frequently the beginning of a city. Montreal, Duluth, Chicago, Fort William, Port Arthur, Albany, Minneapolis, etc., are illustrations.

(d) *Water-power.* Water-power supplies a cheap means of moving machinery. Falls and rapids in streams were sought for, and this natural source of energy was utilized before the steam-engine came into general use. Flour-mills and saw-mills were located at these sources of power, and around them industrial centres sprang up. It is to this cause that places like Ottawa, Napanee, Port Hope, Almonte, Peterborough, Bowmanville, Kenora, Lindsay, Fergus, and many others in Ontario owe their position.

(e) *Railway Centres.* By facilitating the collection of raw material and the distribution of the manufactured products, railways have contributed much to the growth of trade centres. Many places such as Montreal, Toronto, Winnipeg, Regina, Calgary, Edmonton, and Vancouver in Canada; and St. Paul, Chicago, Buffalo, St. Louis, and Denver in the United States, owe much of their present importance to their railways. Railways have even changed the industries of a country. It was the railway that made possible the transforming of the prairies of America from being the home of the buffalo to becoming the granary of the world. With rapid transit and cold storage the barren lands of California have been changed by irrigation into orchards and vineyards, and their fruits find market not only in the States bordering on the Atlantic but even in Europe.

(f) *Capitals.* Though capitals are usually chosen for their central position rather than for their commercial advantages, yet the fixing of the seat of government at a place gives a great impetus to its development, and in time it often becomes an important trade centre. Ottawa and Washington in America; and Berlin, Vienna, Madrid, and St. Petersburg, in Europe, are illustrations of how the growth of a place is aided by its being the political centre of the country.

XCVIII. BRIEF SUMMARY OF THE WORLD'S COMMERCE AND INDUSTRY

Agriculture of the World. Inasmuch as every one is dependent upon the products of the soil for his food, agriculture and grazing are important occupations in all parts of the world. In the agricultural regions of the tropics, crops can be raised easily, because the deep, rich soil and moist climate favour the rapid growth of vegetation. In the temperate lands the climate is more changeable, and hence, even where the soil is rich, the lands have to be cultivated during the growing season in order to secure the best returns from the soil. Therefore, agriculture as an occupation has attained a higher degree of excellence in the temperate regions, and this is especially so in the North Temperate Belt, where the population is much more dense than it is in the South Temperate Belt, and where the demand for food is consequently greater.

Leading Crops of the Temperate Regions. The chief crops of the temperate regions are cereals, especially wheat, rye, oats, barley, and corn. Wheat and rye are the principal cereals used for food by the white race, while corn and oats are grown principally for stock, though both are used as food for people in certain countries. Wheat is rapidly supplanting rye as a food among the peasants of Europe, and is beginning to be used instead of rice in India, China, and Japan.

Wheat. Wheat is the most important of all cereals. It thrives best on warm, dry plains, with a soil stiff enough to retain the moisture. Russia and the United States raise more than one third of the total crop, owing to vast areas of excellent soil adapted to wheat growing, and to favourable climate. The other wheat-producing nations in the order of their importance are: India, France and Algeria, Austria-Hungary, Italy, Germany, the Argentine Republic, and Canada. Canada raises the best hard wheat in the world and sends to Great Britain and Belgium a large part of the wheat flour which it exports.

Rye. Rye is the chief food of the peasants of Germany, Russia, and other European countries. It thrives on poor soil and will stand a colder climate than wheat. The principal rye-producing countries are Russia, Germany and Austria-Hungary, which together raise about four fifths of the world's crop. The production of rye in Canada is relatively unimportant.

Oats. Oats can be grown in the temperate regions where wheat thrives and is an important crop in the far north. Russia leads the world with more than one fourth of the oat crop. The United States is a close second. Germany, France, Canada, and the United Kingdom follow in order.

Barley. Barley thrives in a wider range of climate than any other cereal, though it is most successful in a climate similar to that favourable for oats. Practically eighty per cent. of the barley of the world is grown in Europe, especially in Russia, Germany, Austria-Hungary, France, Spain, and the United Kingdom. Canada ranks seventh in the world's production.

Corn. Indian corn is now very widely grown, though it originally was known only in the Americas. It requires more heat and moisture than wheat. The United States produces about three fourths of all the corn in the world, Austria-Hungary and the Argentine Republic ranking second and third in importance. It is the chief crop of the Northern States of the Mississippi Basin, where the climate is especially favourable. The total value of the corn crop in the United States is greater than that of all the other cereals grown in that country.

Flax. Flax is grown either for its fibre or for its seed. It thrives through a wide range of climate. Warm countries, as India, produce the best seed, and colder ones, as Russia, the best fibre. Western Russia, Italy, Belgium, Ireland, Argentina, and India produce the greater part of the world's supply of this plant. By a recent invention, the fibre can be economically made into a good binder-twine of much service to farmers.

Wool. Sheep are reared in all parts of the world. The climate best adapted for producing wool is one that is comparatively dry, and free from extremes of cold. Four fifths of the wool crop of the world is produced by Australia, Argentina, Russia, the United States, Great Britain, Spain, South Africa, and France.

Silk. Since mulberry leaves form the chief food of the silk-worm, it can be reared in all climates in which the mulberry thrives. Tending the silk-worms and preparing the raw silk for market requires a large amount of labour and care; hence silk-rearing is confined to those parts of the world where labour is cheap. China, Japan, and Italy produce more than four fifths of the silk of the world. The remainder is produced by the Levant, France, Austria-Hungary, and British India.

Wood Pulp. In recent years wood pulp has become an important article of commerce. The woods chiefly used to produce the pulp are spruce, and other conifers—all trees of northern growth. Norway, Sweden, Canada, and Germany, in the order named, produce more than five sixths of the world's supply.

The Leading Crops of the Tropical and Sub-tropical Countries. The chief crops of the warm and hot regions of the world are rice, cane-sugar, tea, coffee, cocoa, cotton, fruits, and tobacco. Certain of these crops, as, for instance, tobacco and tea, are grown also in the temperate regions, though they were formerly produced only in the warmer countries.

Rice. Rice is the chief cereal of the Far East, and forms the principal food of millions of people of the yellow and brown races. It is, however, not as important commercially as the cereals of the temperate regions, because it is used largely in the countries producing it. It is raised in great quantities in China, India, Japan, Indo-China, the Philippines, and Hawaii.

Sugar. The sugar of commerce is either cane or beet-sugar, the former slightly outranking beet-sugar in amount. Beet-sugar is made in abundance in Germany, Russia, France, and Austria-Hungary. Canada imports its cane-sugar principally from the West Indies and British Guiana. The cane grows in warm, swampy districts.

Tea. Tea is raised principally in India, China, Ceylon, Japan, and Java, where the soil is rich and the climate warm, moist, and equable. The greatest consumers of tea are the United Kingdom, Russia, the United States, Canada, and Australia.

Coffee. Coffee is distinctly a tropical product, and about ninety per cent. of the coffee of the world is produced in Brazil, Central America, Venezuela, and Mexico. Canada receives most of its coffee from the American countries, and especially from Brazil and the Central American States. It is consumed chiefly by the United States, Germany, France, Belgium, and Austria-Hungary.

Cocoa. The cocoa-tree requires a high temperature, a good deal of moisture, and a considerable depth of rich soil. Hence it is grown on low lands near the equator. Ecuador, the coasts of Venezuela and Northern Brazil, and some of the West Indies, as Trinidad and St. Thomas in the western hemisphere, and Ceylon and Java in the eastern, are the chief parts in which it is grown. Spain, Portugal, and France are the principal consumers of cocoa.

Cotton. Cotton, the most important of the vegetable fibres, is raised in warm, moist, sub-tropical climates, and especially in the United States, India, Egypt, and China. The United States produces more than seventy per cent. of the world's crop, and exports it largely to the cotton-mills of the United Kingdom, Germany, and France.

Tobacco. Tobacco is grown widely in the temperate and tropical regions. The United States leads the world in production, and also in exports, of tobacco. The product goes chiefly to Europe, Canada, Australia, Japan, and South Africa. British India ranks second in the production of this crop. These two countries produce more than three fifths of all the tobacco grown.

India Rubber. India-rubber is produced from the milky sap of various tropical plants which grow in moist, hot climates. More than half the rubber of commerce now comes from the basins of the Amazon and Congo rivers.

THE MINERALS OF THE WORLD.

Gold. British South Africa, the greatest gold-producing country in the world, supplies nearly two fifths of the world's output. The United States and Australasia rank second and third. These are followed in order by Russia, India, and Canada.

Silver. The United States and Mexico together produce more than forty per cent. of the world's output in about equal proportions. These are followed in order by Australasia, Canada, and Peru.

Coal and Iron. The raw products already mentioned furnish the chief needs of the manufacturing nations, except for wool, coal, and iron. Many nations with supplies of coal and iron import their food materials largely, and devote their attention to manufacturing. The nations with the greatest development of coal and iron mines are the United States, the United Kingdom, and Germany, though some of the largest collieries in the world are found in Cape Breton, N. S.

Petroleum. The United States and the Russian Trans-Caucasian Province together produce eighty-five per cent. of the world's petroleum. The remainder is chiefly produced by the East Indies, Austria-Hungary, Roumania, and Canada.

Manufactures. Owing to the supply of raw materials, coal, and iron, and to the inventiveness of the people, the United Kingdom, the United States, Germany, and France are the leading manufacturing nations, sending their finished products to all parts of the world. The exports of the United Kingdom and Germany outrank those of the United States, because that country, with its larger population and rapid progress, consumes a greater proportion of its manufactured products, and imports many manufactured products from other countries.

Fisheries. Owing to their favourable situation, and the enterprise of their fishermen, the United States, Canada, and Great Britain furnish eighty per cent. of the world's supply of fish. Japan, Norway, Russia, France, Spain, and Portugal in this order furnish the greater part of the remainder. Codfish are only found in large quantities in the cold northern waters, principally in the vicinity of the Grand Banks, off the Newfoundland coast. Thousands of men go in schooners each year from Nova Scotia and New England ports, to engage in the codfishery.

Timber. Most of the timber of commerce is obtained from firs and pines. Russia, Norway, Sweden, and Austria-Hungary in the Old World, and Canada and the United States in the New, are the chief countries now producing timber. Canada has a forest area of about 1,250,000 square miles and the Dominion and Provincial governments are putting forth every effort to conserve this great national asset.

Furs. Furs are collected almost exclusively from the temperate and the cold parts of the world. The furs from Canada and the United States are collected and sent to *New York*, or to *London*, England. Those of Siberia and Northern Russia are collected at *Nizhniy-Novgorod*. *Leipzig*, which receives supplies from these three markets, and also directly from all parts of the world, is the greatest fur market in the world.

Hides. Leather is made mainly from the hides of domesticated animals, such as the horse, ox, sheep, goat, and pig. Hides come chiefly from lands where there are vast areas of pasture land and a scanty population, as from Australia, South Africa, and South America. Where the population is denser, the hides are usually tanned, as is the case in British India, the United States, and Canada. Morocco and Russia are noted for producing valuable leathers. Germany, France, and the United Kingdom are the countries in which the manufacture of articles from leather is most highly developed.

REFERENCE TABLES

Areas of the Oceans

(Estimated by Ravenstein)

[illegible]	Area in Square Miles
Arctic	5,285,000
Antarctic	5,731,350
Indian	28,615,600
Atlantic	34,801,400
Pacific	67,699,630

Areas and Population of the Principal Countries of the World

(Based upon the Statesman's Year Book for 1911)

Year		Area	Population
NORTH AMERICA		**9,000,000**	**125,000,000**
1909	Belize	8,600	44,000
1911	Canada	3,729,665	7,192,000
1909	Costa Rica	18,400	368,000
1910	Cuba	44,000	2,150,000
1910	Guatemala	48,290	1,992,000
1909	Haiti (Island)	28,250	2,639,000
1905	Honduras	46,000	500,000
1910	Mexico	767,000	15,063,000
1909	Newfoundland	42,700	234,000
1910	Nicaragua	49,200	600,000
1906	Salvador	7,225	1,116,000
1910	United States	3,565,000	92,036,000
SOUTH AMERICA		**7,300,000**	**44,500,000**
1909	Argentina	1,136,000	6,805,000
1908	Brazil	3,219,000	21,461,000
1909	British Guiana	90,000	305,000
1908	Bolivia	605,400	2,049,000
1908	Chile	293,000	3,302,000
1908	Colombia	435,000	4,303,000
1909	Dutch [illegible]	46,000	83,000
1909	[illegible]	116,000	1,272,000
190[illegible]	[illegible]	30,500	40,000
19[illegible]	[illegible]	171,000	631,000
1[illegible]	[illegible]	696,000	4,609,000
1[illegible]	[illegible]	72,200	1,095,000
19[illegible]	[illegible]	394,000	2,686,000
EU[illegible]		**3,750,000**	**440,000,000**
1910	Austria-Hungary	241,300	49,419,000
1909	Belgium	11,400	7,452,000
1910	Bulgaria	38,000	4,329,000
1906	Denmark	15,500	2,605,000
1911	England	50,200	34,043,000
1910	France	207,000	39,602,000
1910	Germany	208,700	64,903,000
1909	Greece	25,000	2,666,000
1911	Ireland	32,600	4,382,000
1910	Italy	110,500	34,565,000
1910	Montenegro	3,600	250,000
1909	Netherlands	12,600	5,898,000
1910	Norway	125,000	2,392,000
1907	Portugal	35,500	[illegible]
1909	Rumania	50,700	6,866,000
1909	Russia	1,997,000	132,997,000
1911	Scotland	30,000	4,759,000
1905	Servia	19,000	2,688,000
1910	Spain	195,000	19,503,000
1909	[illegible]	173,000	5,476,000
1910	Switzerland	16,000	3,742,000
1910	European Turkey	65,000	6,130,000
1911	Wales	7,400	2,032,000
ASIA		**17,000,000**	**950,000,000**
1910	Afghanistan	250,000	4,750,000
1910	Arabia	1,000,000	1,050,000
1910	Asiatic Turkey	693,000	17,682,000
1910	Baluchistan	131,000	1,000,000
1905	Borneo	244,000	1,420,000
1905	Celebes	71,000	852,000
1909	Chinese Empire	4,277,000	439,214,000
1911	India (British)	1,766,000	315,000,000
1906	Indo-China (French)	256,000	16,315,000
1910	Japanese Empire	260,000	66,830,000
1905	Java	51,000	30,098,000
1910	Nepal	54,000	5,000,000
1910	Persia	628,000	9,500,000
1903	Philippines	128,000	7,635,000
1909	Russia in Asia	6,207,000	24,082,000
1909	Siam	195,000	6,250,000
1905	Sumatra	161,000	4,030,000
AFRICA		**11,500,000**	**130,000,000**
1910	Abyssinia	432,000	5,000,000
1910	British Africa other than the Union of South Africa.	1,733,000	28,027,000
1910	Congo (Belgian)	910,000	20,000,000
1907	Egypt	400,000	11,287,000
1910	French Africa including Algeria, Tunis, and Madagascar	4,422,000	24,576,000
1910	German Africa	931,000	14,120,000
1910	Italian Africa	190,000	1,000,000
1910	Liberia	40,000	2,000,000
1910	Morocco	219,000	5,000,000
1910	Portuguese Africa	793,000	8,248,000
1910	Tripoli	399,000	1,000,000
	Union of South Africa:		
1904	Cape of Good Hope	277,000	2,510,000
1909	Natal	36,000	1,249,000
[illegible]	Orange Free State	50,000	479,000
1910	Spanish Africa	80,000	292,000
1910	Transvaal	111,000	1,400,000

OCEANIA

Year		Area	Population	[illegible]		Area	Population
		3,500,000	6,000,000				
1910	Hawaii	6,500	191,000	1911	South Australia	380,070	413,000
1910	New Guinea	373,000	1,692,000	1911	Northern Territory	523,620	3,000
1910	New South Wales	310,300	1,665,000	[illegible]	Tasmania	26,375	185,000
1910	New Zealand	105,000	1,048,000	[illegible]	Victoria	88,000	1,303,000
1909	Queensland	670,500	578,000	1910	West Australia	975,900	284,000

Area and Population of Canada (*Based on reports of Department of Interior*)

Provinces and Territories	When Admitted or Organized	Area			Population
		Land	Water	Total	
Ontario	July 1, 1867	366,908	40,354	407,262	2,523,000
Quebec	" "	696,717	10,117	706,834	2,003,000
New Brunswick	" "	27,911	74	27,985	352,000
Nova Scotia	" "	21,068	[illegible]	21,428	492,000
Manitoba	July 15, 1870	242,427	9,405	251,832	456,000
British Columbia	July 20, 1871	355,161	2,439	357,600	392,000
Prince Edward Island	July 1, 1873	2,184		2,184	93,700
Saskatchewan	Sept. 1, 1905	242,332	8,318	250,650	492,000
Alberta	" "	251,180	2,360	253,540	375,000
Yukon Territory	June 13, 1898	206,427	649	207,076	8,512
North-West Territories	Sept. 1, 1905	1,194,594	51,680	1,246,274	16,951

Cities and Towns in Canada by Provinces

ONTARIO

(Census, 1911)

Cities	Population
Belleville	9,876
Berlin	15,196
Brantford	23,132
Chatham	10,770
Fort William	16,499
Guelph	15,175
Hamilton	81,969
Kingston	18,874
London	46,300
Niagara Falls	9,248

Cities	Population
Ottawa	87,062
Peterborough	18,360
Port Arthur	11,220
St. Catharines	12,484
St. Thomas	14,054
Sault Ste. Marie	10,984
Stratford	12,946
Toronto	376,538
Windsor	17,829
Woodstock	9,320

Towns	Population
Alexandria	2,323
Almonte	2,452
Amherstburg	2,560
Arnprior	4,405
Aurora	1,901
Aylmer	2,102
Barrie	6,420
Blind River	2,558
Bowmanville	2,814
Bracebridge	2,776
Brampton	3,412
Brockville	9,374
Campbellford	3,051
Carleton Place	3,621
Clinton	2,254
Cobalt	5,638
Cobourg	5,074
Collingwood	7,090

Towns	Population
Copper Cliff	3,082
Cornwall	6,598
Deseronto	2,013
Dundas	4,299
Dunnville	2,861
Galt	10,299
Gananoque	3,804
Goderich	4,522
Haileybury	3,874
Hanover	2,342
Hawkesbury	4,400
Hespeler	2,368
Huntsville	2,358
Ingersoll	4,763
Kenora	6,158
Kincardine	1,956
Leamington	2,652
Lindsay	6,964

Towns	Population
Listowel	2,289
Meaford	2,811
Midland	4,663
Napanee	2,807
New Liskeard	2,108
Newmarket	2,996
North Bay	7,737
North Toronto	5,362
Oakville	2,372
Orangeville	2,340
Orillia	6,828
Oshawa	7,436
Owen Sound	12,558
Paris	4,098
Parry Sound	3,429
Pembroke	5,626
Penetanguishene	3,568
Perth	3,588
Petrolea	3,518
Picton	3,564
Port Hope	5,092
Prescott	2,801
Preston	3,883
Renfrew	3,846

Towns	Population
Ridgetown	1,954
Rockland	3,397
St. Marys	3,388
Sandwich	2,302
Sarnia	9,947
Seaforth	1,983
Simcoe	3,227
Smith's Falls	6,370
Steelton	3,936
Strathroy	2,823
Sturgeon Falls	2,190
Sudbury	4,150
Thessalon	1,945
Thorold	2,273
Tillsonburg	2,758
Trenton	3,988
Walkerton	2,601
Walkerville	3,302
Wallaceburg	3,438
Waterloo	4,359
Welland	5,318
Whitby	2,248
Wiarton	2,266
Wingham	2,238

QUEBEC

(Census, 1911)

Cities	Population
Hull	17,585
Levis	7,448
Montreal	466,197
Quebec	78,067
St. Hyacinthe	9,797

Cities	Population
Salaberry de Valleyfield	9,447
Sherbrooke	16,405
Sorel	8,419
Three Rivers	14,441

Cities and Towns in Canada by Provinces—*Continued*

QUEBEC—*Continued*

Towns	Population	Towns	Population
Aylmer	3,206	Longueuil	4,016
Buckingham	3,854	Magog	3,990
Chicoutimi	5,580	Maisonneuve	18,674
Coaticook	3,165	Nicolet	2,593
Drummondville	1,725	Richmond	2,175
Farnham	3,560	St. Jerome	3,479
Fraserville	6,842	St. Johns	5,903
Granby	4,750	St. Lambert	3,350
Grand Mere	4,783	Shawenegan Falls	4,625
Joliette	6,346	Thetford Mines	7,261
Lachine	10,778	Verdun	11,622
Lachute	2,407	Victoriaville	3,028
Lake Megantic	2,399	Westmount	14,318
Longue Pointe	3,037	Windsor Mills	2,233

NEW BRUNSWICK

(Census, 1911)

Cities	Population	Cities	Population
Fredericton	7,208	St. John	42,490
Moncton	11,333		

Towns	Population	Towns	Population
Bathurst	960	Richibucto	612
Chatham	4,662	Sackville	1,380
Campbellton	3,816	St. Andrews	987
Dalhousie	1,650	St. George	1,629
Edmundston	1,821	St. Stephen	836
Grand Falls	1,539	Shediac	1,442
Marysville	1,837	Sussex	1,906
Milltown	1,904	Woodstock	3,856
Newcastle	2,945		

NOVA SCOTIA

(Census, 1911)

Cities	Population	Cities	Population
Halifax	46,601	Sydney	17,617

Towns	Population	Towns	Population
Amherst	8,973	North Sydney	5,418
Dartmouth	5,058	Pictou	3,179
Dominion	2,589	Springhill	5,713
Glace Bay	16,561	Stellarton	1,614
Inverness	2,719	Sydney Mines	7,464
Kentville	2,304	Truro	6,015
Liverpool	2,109	Westville	4,417
Lunenburg	2,681	Windsor	3,452
New Glasgow	6,383	Yarmouth	6,571

PRINCE EDWARD ISLAND

City	Population
Charlottetown	11,198

Towns	Population	Towns	Population
Georgetown	1,000	Summerside	2,700

MANITOBA

(Census, 1911)

Cities	Population	Cities	Population
Brandon	13,837	St. Boniface	7,478
Portage la Prairie	5,885	Winnipeg	135,430

Towns	Population	Towns	Population
Boissevain	913	Minnedosa	1,483
Carberry	878	Morden	1,130
Carman	1,266	Morris	1,897
Dauphin	2,215	Neepawa	1,863
Deloraine	808	Selkirk	2,990
Emerson	1,043	Souris	1,854
Gladstone	782	Stonewall	1,005
Killarney	1,010	Virden	1,550

SASKATCHEWAN

(Census, 1911)

Cities	Population	Cities	Population
Moosejaw	13,824	Regina	30,210
Prince Albert	6,254	Saskatoon	12,002

Towns	Population	Towns	Population
Arcola	794	Moosomin	1,143
Battleford	1,331	North Battleford	2,105
Broadview	702	Qu'Appelle	850
Estevan	1,925	Rosthern	1,172
Grenfell	700	Strasburg	811
Humboldt	859	Swift Current	1,852
Indian Head	1,285	Watrous	781
Lloydminster	441	Weyburn	2,210
Maple Creek	936	Wolseley	961
Melville	1,816	Yorkton	2,302

ALBERTA

(Census, 1911)

Cities	Population	Cities	Population
Calgary	43,663	Medicine Hat	5,573
Edmonton	24,855	Strathcona	5,579
Lethbridge	8,050	Wetaskiwin	2,411

Towns	Population	Towns	Population
Camrose	1,586	Macleod	1,837
Cardston	1,207	Magrath	995
Castor	1,609	Pincher Creek	1,027
Claresholm	809	Raymond	1,465
Coleman	1,557	Red Deer	2,118
Didsbury	726	Stettler	1,444
Fort Saskatchewan	785	Taber	2,321
High River	1,173	Vegreville	1,029
Lacombe	1,029		

BRITISH COLUMBIA

(Census, 1911)

Cities	Population	Cities	Population
Nanaimo	8,305	Rossland	2,827
Nelson	4,563	Vancouver	100,333
New Westminster	13,394	Victoria	31,620

Towns	Population	Towns	Population
Chilliwack	1,657	North Vancouver	7,781
Cranbrook	2,635	Old Michel	1,515
Esquimalt	4,001	Point Grey	4,319
Fernie	1,287	Prince Rupert	4,184
Grand Forks	1,577	Revelstoke	3,010
Hosmer	2,010	South Vancouver	16,021
Kamloops	3,772	Trail	1,460
Kolowna	1,663	Vernon	2,671
Ladysmith	3,295		

Areas and Population of the United States and its Possessions

(From Thirteenth Census of the United States and United States Geological Survey, Bulletin No. 302, Series F Geography 53)

STATES	Land Surface	Water Surface	Population
Alabama	51,279	719	2,138,093
Arizona	113,840	116	204,354
Arkansas	52,525	810	1,574,449
California	156,092	2,205	2,377,549
Colorado	103,658	290	779,024
Connecticut	4,820	145	1,114,756
Delaware	1,965	405	202,322
District of Columbia	60	10	331,069
Florida	54,861	3,805	752,619
Georgia	58,725	540	2,609,121
Idaho	83,779	534	325,594
Illinois	56,002	663	5,638,591
Indiana	35,885	469	2,700,867
Iowa	55,586	561	2,224,771
Kansas	81,774	384	1,690,949
Kentucky	40,181	417	2,289,905
Louisiana	45,409	3,097	1,656,388
Maine	29,895	3,145	742,371
Maryland	9,941	2,386	1,295,346
Massachusetts	8,039	227	3,366,416
Michigan	57,480	500	2,810,173
Minnesota	80,858	3,824	2,075,708
Mississippi	46,362	503	1,797,114
Missouri	68,727	693	3,293,335
Montana	145,776	796	376,053
Nebraska	76,808	712	1,192,214
Nevada	109,821	869	81,875
New Hampshire	9,031	310	430,572
New Jersey	7,514	710	2,537,167
New Mexico	122,503	131	327,301
New York	47,654	1,550	9,113,614
North Carolina	48,740	3,686	2,206,287
North Dakota	70,183	654	577,056
Ohio	40 740	300	4,767,121
Oklahoma	69,414	643	1,657,155
Oregon	95,607	1,092	672,765
Pennsylvania	44,832	294	7,665,111
Rhode Island	1,067	181	542,610
South Carolina	30,495	494	1,515,400
South Dakota	76,868	747	583,888
Tennessee	41,687	335	2,184,789
Texas	262,398	3,498	3,896,542
Utah	82,184	2,806	373,351
Vermont	9,124	440	355,956
Virginia	40,262	2,365	2,061,612
Washington	66,836	2,291	1,141,990
West Virginia	24,022	148	1,221,119
Wisconsin	55,256	810	2,333,860
Wyoming	97,594	320	145,965
TERRITORIES			
Alaska	590,884	...	64,356
Hawaii	6,449	....	191,909

OTHER POSSESSIONS	Land Surface	Water Surface	Population
Guam	210	......	11,973
Panama Canal Zone	474	.....	43,000
Philippines, The	115,026	717,942	7,635,426
Porto Rico	3,435	......	1,118,012
Tutuila, Samoan Islands	77	......	6,668

Leading Cities of the United States

POPULATION (over 100,000)

	Population
New York, N. Y.	4,766,883
Chicago, Ill.	2,185,283
Philadelphia, Pa.	1,549,008
St. Louis, Mo.	687,029
Boston, Mass.	670,585
Cleveland, Ohio	560,663
Baltimore, Md.	558,485
Pittsburg, Pa.	533,905
Detroit, Mich.	465,766
Buffalo, N Y	423,715
San Francisco, Cal.	416,912
Milwaukee, Wis.	373,859
Cincinnati, Ohio	363,591
Newark, N.Y.	347,469
New Orleans, La.	339,075
Washington, D. C.	331,069
Los Angeles, Cal	319,198
Minneapolis, Minn.	301,408
Jersey City, N. Y.	267,779
Kansas City, Mo.	248,384
Seattle, Wash.	237,194
Indianapolis, Ind.	233,650
Providence, R. I.	224,326
Louisville, Ky.	223,928
Rochester, N.Y.	218,149

	Population
St. Paul, Minn.	214,744
Denver, Colo.	213,381
Portland, Oreg.	207,214
Columbus, Ohio	181,511
Toledo, Ohio	168,497
Atlanta, Ga.	154,839
Oakland, Cal.	150,174
Worcester, Mass.	145,986
Syracuse, N. Y.	137,249
New Haven, Conn.	133,605
Birmingham, Ala.	132,685
Memphis, Tenn.	131,105
Scranton, Pa.	129,867
Richmond, Va.	127,628
Paterson, N. J.	125,600
Omaha, Nebr.	124,096
Fall River, Mass.	119,295
Dayton, Ohio.	116,577
Grand Rapids, Mich	112,000
Nashville, Tenn.	110,365
Lowell, Mass.	106,294
Cambridge, Mass.	104,839
Spokane, Wash.	104,402
Bridgeport, Conn.	102,054
Albany, N. Y.	100,258

Population of the Principal Cities of the World

(Largely based on the Statesman's Year Book, 1911)

NORTH AMERICA

British America –

Year		Population
1911	Montreal	466,000
1911	Toronto	376,000
1911	Winnipeg	135,000
1911	Vancouver	100,000
1911	Ottawa	86,000
1911	Hamilton	81,000
1911	Quebec	78,069
1911	London	46,000
1911	Halifax	46,000
1911	Calgary	43,000
1911	St. John	42,000
1909	St. John's	32,000
1911	Victoria	31,000

Central America –

Year		Population
1906	Guatemala	125,000
1906	Leon	63,000
1906	San Salvador	59,000
1906	Managua	35,000
1908	San José	27,000

Mexico –

1910	Mexico	470,000
1910	Guadalajara	119,000

United States–

(See above)

West Indies –

1910	Havana	303,000
1908	Port au Prince	100,000
1909	Cienfuegos	70,000
1910	Matanzas	64,000
1910	Santiago	54,000
1910	Kingston	47,000

Population of the Principal Cities of the World
Continued

SOUTH AMERICA

Argentina—

Year		Population
1909	Buenos Aires	1,303,000
1909	Rosario	176,000
1909	La Plata	95,000
1909	Tucuman	75,000
1909	Cordoba	70,000

Bolivia—

Year		Population
1909	La Paz	79,000
1909	Cochambamba	25,000
1909	Sucre	23,000

Brazil—

Year		Population
1909	Rio de Janeiro	1,000,000
1909	Sao Paulo	400,000
1909	Bahia	230,000
1909	Belem	200,000
1909	Pernambuco	150,000

Chile—

Year		Population
1907	Santiago	333,000
1907	Valparaiso	162,000

Colombia—

Year		Population
1910	Bogotá	150,000
1910	Medellin	60,000
1910	Barranquilla	40,000

Ecuador—

Year		Population
1909	Guayaquil	80,000
1909	Quito	70,000

Guiana—

Year		Population
1909	Georgetown	53,000
1909	Paramaribo	35,000
1906	Cayenne	12,000

Paraguay—

Year		Population
1905	Asuncion	60,000

Peru—

Year		Population
1908	Lima	141,000
1908	Arequipa	37,000
1908	Callao	31,000
1908	Cuzco	12,000

Uruguay—

Year		Population
1909	Montevideo	318,000

Venezuela—

Year		Population
1904	Caracas	90,000
1905	Maracaibo	50,000

EUROPE

Austria-Hungary—

Year		Population
1910	Vienna	2,031,000
1900	Budapest	732,000
1910	Trieste	229,000
1910	Prague	225,000
1910	Lemberg	207,000

[illegible]—

Year		Population
1910	Constantinople	1,200,000
1909	Bukharest	300,000
1910	Salonica	174,000
1907	Athens	167,000
1910	Sofia	103,000
1910	Belgrade	[illegible]

Belgium—

Year		Population
1909	Brussels	650,000
1909	Antwerp	317,000
1909	Liège	177,000
1909	Ghent	165,000

Denmark—

Year		Population
1906	Copenhagen	514,000

England and Wales—

Year		Population
1911	Greater London	7,253,000
1911	Liverpool	747,000
1911	Manchester	714,000
1911	Birmingham	526,000
1911	Sheffield	456,000
1911	Leeds	446,000
1911	Bristol	357,000
1911	Bradford	289,000
1911	Newcastle	267,000
1911	Nottingham	260,000
1911	Salford	231,000
1911	Cardiff	182,000

France—

Year		Population
1910	Paris	2,888,000
1910	Marseilles	550,000
1910	Lyons	523,000
1906	Bordeaux	252,000
1906	Lille	206,000
1906	Toulouse	150,000
1906	St. Étienne	147,000
1906	Nice	134,000
1906	Nantes	133,000
1906	Havre	132,000

Germany—

Year		Population
1910	Berlin	2,071,000
1910	Hamburg	932,000
1910	Munich	595,000
1910	Leipzig	588,000
1910	Dresden	547,000
1910	Cologne	516,000
1910	Breslau	512,000
1910	Frankfort-on-Main	415,000

Ireland—

Year		Population
1911	Belfast	384,000
1911	Dublin	299,000
1911	Cork	77,000
1911	Limerick	38,000

Italy—

Year		Population
1909	Naples	596,000
1909	Milan	[illegible]
1909	Rome	575,000
1909	Turin	371,000
1909	Palermo	319,000
1909	Genoa	275,000
1909	Florence	227,000
1909	Venice	[illegible]

Netherlands

Year		Population
1909	Amsterdam	568,000
1909	Rotterdam	418,000
1909	The Hague	270,000
1909	Utrecht	118,000

Norway—

Year		Population
1910	Christiania	245,000
1910	Bergen	77,000

Portugal—

Year		Population
1900	Lisbon	[illegible]
1900	Oporto	[illegible]

Russia—

Year		Population
1908	St. Petersburg	1,870,000
1907	Moscow	1,469,000
1908	Warsaw	764,000
1909	Odessa	520,000
1908	Lodz	394,000
1908	Kiev	320,000
1908	Riga	318,000

Scotland—

Year		Population
1911	Glasgow	784,000
1911	Edinburgh	355,000
1911	Dundee	169,000
1911	Aberdeen	163,000

Spain—

Year		Population
1910	Madrid	572,000
1910	Barcelona	560,000
1900	Valencia	214,000
1910	Seville	155,000
1910	Malaga	133,000

Sweden—

Year		Population
1909	Stockholm	342,000
1909	Gothenburg	164,000

Switzerland—

Year		Population
1910	Zurich	189,000
1910	Basel	131,000
1910	Geneva	126,000
1910	Bern	85,000

ASIA

Asiatic Russia—

Year		Population
1904	Tiflis	197,000
1904	Baku	177,000
1904	Tashkend	165,000
1908	Kokand	112,000

British India—

Year		Population
1911	Calcutta	1,216,000
1911	Bombay	973,000
1901	Madras	509,000
1901	Haidarábád	448,000
1911	Rangoon	289,000
1901	Lucknow	264,000
1901	Benares	209,000
1901	Delhi	208,000
1901	Lahore	202,000
1901	Cawnpore	197,000
1901	Agra	188,000
	Mandalay	184,000

China—

Year		Population
1909	Canton	1,250,000
1909	Hankow	820,000
1909	Tientsin-fu	800,000
1909	Peking	700,000
1909	Shanghai	651,000
1909	Foochow	624,000
1909	Suchan	500,000
1909	Ningpo	400,000

French Indo-China—

Year		Population
1910	Saigon	189,000
1906	Hanoi	103,000
1911	Hué	50,000

East India Islands—

Year		Population
1903	Manilla	220,000
1905	Surabaya	150,000
1905	Batavia	139,000

Japan—

Year		Population
1908	Tokyo	2,186,000
1908	Osaka	1,227,000
1908	Kyoto	442,000
1908	Yokohama	394,000
1908	Nagoya	378,000
1908	Kobé	378,000
1908	Nagasaki	176,000
1909	Seoul	150,000

Siam—

Year		Population
1909	Bangkok	629,000

South-west Asia—

Year		Population
1910	Smyrna	350,000
1910	Damascus	350,000
1910	Teherân	280,000
1910	Aleppo	210,000
1910	Tabriz	200,000
1910	Ispahân	80,000
1910	Mecca	80,000
1910	Jerusalem	80,000
1910	Bagdad	75,000
1910	Kâbul	75,000
1910	Kandahár	60,000
1910	Herât	45,000

Population of the Principal Cities of the World
Continued

AFRICA

Year		Population
1907	Cairo	655,000
1907	Alexandria	332,000
1907	Tunis	250,000
1904	Cape Town	169,000
1910	Johannesburg	159,000
1908	Algiers	154,000
1900	Fez	140,000
1908	Oran	107,000
1910	Antananarivo	95,000
1909	Durban	69,000
1910	Morocco	50,000
1907	Port Said	50,000
1909	Freetown	37,000
1910	Zanzibar	35,000
1910	Tangier	35,000
1904	Kimberley	34,000
1910	Mombasa	30,000
1910	Tripoli	30,000
1908	Monrovia	6,000

OCEANIA

Year		Population
1909	Sydney	606,000
1909	Melbourne	562,000
1909	Adelaide	184,000
1909	Brisbane	143,000
1906	Auckland	82,000
1906	Wellington	64,000
1906	Dunedin	56,000
1909	Perth	54,000
1910	Honolulu	50,000
1908	Hobart	35,000

Twenty-five Largest Cities in the World

(Largely based on the Statesman's Year Book, 1911)

		Population
1.	Greater London, England	7,253,000
2.	New York, U. S. A.	4,766,883
3.	Paris, France	2,763,393
4.	Tokyo, Japan	2,186,079
5.	Chicago, U. S. A.	2,185,283
6.	Vienna, Austria	2,083,888
7.	Berlin, Germany	2,070,153
8.	St. Petersburg, Russia	1,678,000
9.	Philadelphia, U. S. A.	1,549,008
10.	Moscow, Russia	1,359,254
11.	Buenos Aires, Argentine Republic	1,302,000
12.	Canton, China	1,250,000
13.	Osaka, Japan	1,226,000
14.	Calcutta, India	1,216,000
15.	Constantinople, Turkey	1,200,000
16.	Singan-fu, China	1,000,000
17.	Rio de Janeiro	1,000,000
18.	Bombay, India	972,000
19.	Hamburg, Germany	932,000
20.	Hankow, China	820,000
21.	Tientsin-fu, China	800,000
22.	Glasgow, Scotland	784,000
23.	Warsaw, Russia	764,000
24.	Liverpool, England	747,000
25.	Budapest, Austria-Hungary	732,000

Other Large Cities in the Different Countries of the World

(Largely based on the Statesman's Year Book, 1911)

		Population
1.	Aberdeen, Scotland	163,000
2.	Adelaide, Australia	184,000
3.	Adrianople, Turkey	83,000
4.	Agra, India	188,000
5.	Aix-la-Chapelle, Germany	156,000
6.	Aleppo, Syria	210,000
7.	Alexandria, Egypt	332,000
8.	Algiers, Algeria	154,000
9.	Allahabad, India	172,000
10.	Altona, Germany	172,000
11.	Amsterdam, Holland	568,000
12.	Antananarivo, Madagascar	95,000
13.	Antwerp, Belgium	317,000
14.	Arequipa, Peru	37,000
15.	Asuncion, Paraguay	60,000
16.	Athens, Greece	167,000
17.	Auckland, New Zealand	82,000
18.	Bagdad, Turkey	75,000
19.	Bahia, Brazil	230,000
20.	Baku, Asiatic Russia	178,000
21.	Bangkok, Siam	628,000
22.	Barcelona, Spain	560,000
23.	Barranquilla, Colombia	40,000
24.	Basel, Switzerland	132,000
25.	Batavia, Java	138,000
26.	Beirut, Syria	150,000
27.	Belfast, Ireland	384,000
28.	Belgrade, Servia	84,000
29.	Benares, India	200,000
30.	Bergen, Norway	77,000
31.	Bern, Switzerland	85,000
32.	Birmingham, England	526,000
33.	Bogotá, Colombia	150,000
34.	Bordeaux, France	252,000
35.	Bradford, England	280,000
36.	Bremen, Germany	246,000
37.	Breslau, Germany	511,000
38.	Bridgetown, Barbados	35,000
39.	Bristol, England	357,000
40.	Brussels, Belgium	649,000
41.	Bukarest, Roumania	300,000
42.	Cairo, Egypt	654,000
43.	Callao, Peru	31,000
44.	Cape Town, Cape of Good Hope	169,000
45.	Carácas, Venezuela	[illegible]
46.	Cardiff, Wales	182,000
47.	Charlottenburg, Germany	305,000
48.	Chemnitz, Germany	287,000
49.	Christiania, Norway	242,000
50.	Cologne, Germany	516,000
51.	Colombo, Ceylon	158,000
52.	Concepcion, Chile	55,000
53.	Copenhagen, Denmark	514,000
54.	Cracow, Austria-Hungary	150,000
55.	Damascus, Syria	350,000
56.	Danzig, Germany	170,000
57.	Delhi, India	208,000
58.	Dresden, Germany	546,000
59.	Dublin, Ireland	309,000
60.	Dundee, Scotland	169,000
61.	Durban, Natal	70,000
62.	Dusseldorf	357,000
63.	Edinburgh, Scotland	320,000

Other Large Cities in the Different Countries of the World *Continued*

		Population
64.	Elberfeld, Germany	170,000
65	Fez, Morocco	140,000
66.	Florence, Italy	227,000
67.	Frankfort-on-Main, Germany	414,000
68.	Geneva, Switzerland	125,000
69.	Genoa, Italy	273,000
70.	Georgetown, British Guiana	53,000
71.	Ghent, Belgium	165,000
72.	Gothenburg, Sweden	164,000
73.	Guadalajara, Mexico	118,000
74.	Guayaquil, Ecuador	80,000
75.	Haidarábád, India	448,000
76.	Halifax, Nova Scotia, Canada	46,000
77.	Hamilton, Ontario, Canada	81,000
78.	Hanoi, Indo-China	103,000
79.	Hanover, Germany	302,000
80.	Havana, Cuba	302,000
81.	Havre, France	132,000
82.	Helsingfors, Finland	131,000
83.	Hobart, Tasmania	25,000
84.	Hong-kong, China (British)	337,000
85.	Inverness, Scotland	22,000
86.	Irkutsh, Russia	70,000
87.	Jerusalem, Syria	80,000
88.	Johannesburg, The Transvaal	158,000
89.	Kiev, Russia	320,000
90.	Kimberley, Cape of Good Hope	34,000
91.	Kingston, Jamaica	47,000
92.	Königsberg, Germany	245,000
93.	Kyoto, Japan	442,000
94.	La Paz, Bolivia	78,000
95.	Leeds, England	446,000
96.	Leicester, England	227,000
97.	Leipzig, Germany	587,000
98.	Lemberg, Austria	207,000
99.	Lhasa, Tibet	20,000
100.	Liége, Belgium	177,000
101.	Lille, France	208,000
102.	Lima, Peru	140,000
103.	Lisbon, Portugal	356,000
104.	Lodz, Russian Poland	394,000
105.	Lourenço Marques, Port. East Africa	10,000
106.	Lucknow, India	264,000
107.	Lyons, France	472,000
108.	Madras, India	509,000
109.	Madrid, Spain	571,000
110.	Magdeburg, Germany	279,000
111.	Malaga, Spain	133,000
112.	Manchester, England	714,000
113.	Manilla, Philippine Islands	220,000
114.	Maracaibo, Venezuela	50,000
115.	Marseilles, France	517,000
116.	Mecca, Arabia	80,000
117.	Melbourne, Australia	562,000
118.	Messina, Italy	150,000
119	Mexico, Mexico	470,000
120.	Milan, Italy	584,000
121.	Montevideo, Uruguay	318,000
122.	Montreal, Quebec, Canada	[redacted]
123.	Mukden, Manchuria, China	158,000
124.	Munich, Germany	595,000
125.	Nagoya, Japan	378,000
126.	Nanking, China	267,000
127.	Nantes, France	133,000
128.	Naples, Italy	596,000
129.	Newcastle-upon-Tyne, England	267,000
130.	Nice, France	134,000
131.	Nizhniy-Novgorod, Russia	92,000
132.	Nottingham, England	260,000
133.	Nuremberg, Germany	332,000
134.	Odessa, Russia	520,000
135.	Oporto, Portugal	167,000
136.	Ottawa, Ontario, Canada	86,000
137.	Palermo, Italy	319,000
138.	Peking, China	700,000
139.	Pernambuco, Brazil	150,000
140.	Portsmouth, England	231,000
141.	Prague, Austria	224,000
142.	Pretoria, The Transvaal	37,000
143.	Quebec, Quebec, Canada	78,000
144.	Quito, Ecuador	70,000
145.	Rangoon, India	289,000
146.	Reims, France	110,000
147.	Riga, Russia	318,000
148.	Rome, Italy	575,000
149.	Rosario, Argentine Republic	170,000
150.	Rotterdam, Holland	418,000
151.	Rouen, France	118,000
152.	St. Étienne, France	147,000
153.	St. John, New Brunswick, Canada	42,000
154.	St. John's, Newfoundland	32,000
155.	Salonica, Turkey	174,000
156.	Santiago, Chile	332,000
157.	Santiago, Cuba	53,000
158.	Sao Paulo, Brazil	400,000
159.	Seville, Spain	155,000
160.	Shanghai, China	651,000
161.	Sheffield, England	456,000
162.	Singapore, Straits Settlements	229,000
163.	Smyrna, Turkey	350,000
164.	Sofia, Bulgaria	102,000
165.	Söul, Korea	150,000
166.	Stettin, Germany	236,000
167.	Stockholm, Sweden	341,000
168.	Strasburg, Germany	178,000
169.	Stuttgart, Germany	285,000
170.	Surabaya, Java	150,000
171.	Sydney, Australia	605,000
172.	Tabriz, Persia	200,000
173.	Tashkend, Asiatic Russia	165,000
174.	Teherân, Persia	280,000
175.	The Hague, Holland	270,000
176.	Tiflis, Asiatic Russia	197,000
177.	Toronto, Ontario, Canada	376,000

Other Large Cities in the Different Countries of the World —*Continued*

		Population
178.	Toulouse, France	150,000
179.	Trieste, Austria	229,000
180.	Tunis, Tunis	250,000
181.	Tripoli, Tripoli	30,000
[illegible]	Turin, Italy	371,000
183.	Utrecht, Netherlands	118,000
184.	Valencia, Spain	213,000
185.	Valencia, Venezuela	38,654
186.	Valparaiso, Chile	162,000
187.	Vancouver, British Columbia, Canada	100,000
188.	Venice, Italy	160,000
189.	Wellington, New Zealand	122,000
190.	Winnipeg, Manitoba, Canada	135,000
191.	Yokohama, Japan	394,000
192.	Zanzibar, Zanzibar	35,000
193.	Zurich, Switzerland	189,000

Principal Rivers of the World

NORTH AMERICA

(Based on Longman's Gazetteer of the World)

	Approximate Length in Miles	Approximate Area drained in Square Miles
Missouri-Mississippi	4,194	1,238,642
Yukon	2,050	440,000
Colorado	2,000	276,000
Rio Grande	1,800	145,200
Columbia	1,400	260,000
Saskatchewan-Nelson	1,392	360,000
Athabaska-Mackenzie	1,100	667,000
St. Lawrence	1,034	297,000

SOUTH AMERICA

Amazon	3,415	2,320,000
Paraná-La-Plata	2,170	1,200,000
São Francisco	1,800	397,600
Orinoco	1,550	365,000

EUROPE

Volga	2,325	563,200
Danube	1,800	315,000
Dnieper	1,334	202,200
Don	1,153	166,130
Northern Dvina	1,100	134,000
Dniester	853	16,510
Rhine	810	86,600
Elbe	720	55,340
Vistula	652	73,000
Tagus	566	31,864
Oder	552	43,300
Loire	543	46,756
Rhone	504	38,000
Seine	425	30,028
Po	418	26,800

ASIA

	Approximate Length in Miles	Approximate Area drained in Square Miles
Ob-Irtysh	3,235	1,150,870
Yangtse-kiang	3,000	700,000
Lena	2,860	906,980
Amur	2,700	787,000
Mekong	2,600	350,000
Yenisei	2,500	792,000
Hwang-ho	2,300	387,150
Indus	2,000	360,000
Brahmaputra	1,800	360,000
Ganges	1,455	[illegible]

AFRICA

Nile	3,670	1,620,000
Congo	2,800	1,000,000
Niger	2,600	780,000
Zambesi	1,600	550,000

AUSTRALIA

Darling	1,160	198,000
Murray	1,100	270,000

Principal Lakes of the World

NORTH AMERICA

	Area in Sq. Miles	Altitude in Feet
Superior	31,800	[illegible]
Huron	23,200	581
Michigan	23,450	581
Great Bear	14,000	391
Erie	10,000	572
Winnipeg	9,400	710
Ontario	7,260	246
Great Slave	7,100	520
Nicaragua	2,975	[illegible]
Great Salt[2]	2,560	4,218

SOUTH AMERICA

Titicaca	3,261	12,500

EUROPE

Ladoga	7,000	55

ASIA

Caspian Sea[2]	169,383	86[1]
Lake Aral[2]	26,166	158
Baikal	13,197	1,400
Dead Sea[2]	353	1,290[1]

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[1] Below sea level. [2] Salt.

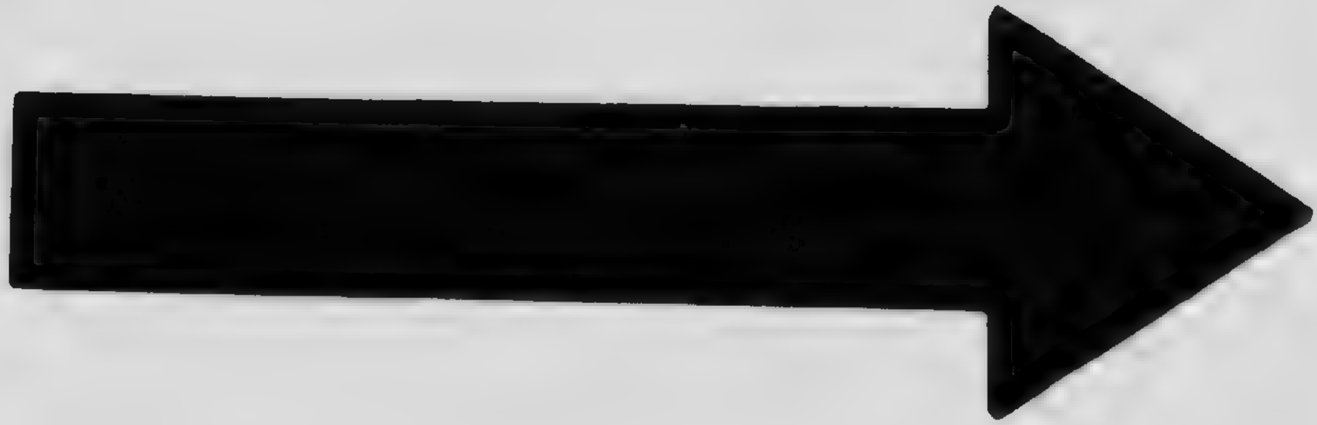
AFRICA

Victoria Nyanza	32,167	3,300
Nyassa	10,000	1,577
Tanganyika	14,000	2,670
Chad	10,400	850

Principal Mountains of the World

NORTH AMERICA

	Where Located	Height in Feet
Mt. McKinley	Alaska	20,464
Mt. Logan	Canada	19,539
Orizaba	Mexico	18,314



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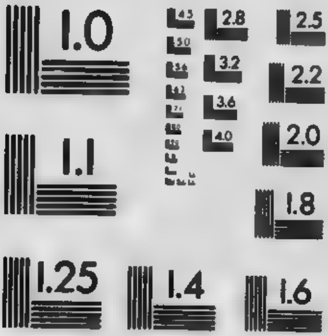

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Principal Mountains of the World—*Continued*

NORTH AMERICA—*Continued*

	Where Located	Height in Feet
Mt. St. Elias	Alaska Yukon Frontier	18,024
Popocatepetl	Mexico	17,550
Wrangell	Alaska	17,500
Mt. Whitney	California	14,502
Massive Mountain	Colorado	14,424
Mt. Shasta	California	14,380
Mt. Rainier	Washington	14,363
Longs Peak	Colorado	14,271
Pikes Peak	Colorado	14,108
Fremont Peak	Wyoming	13,700
Mt. Hood	Oregon	11,225

SOUTH AMERICA

Aconcagua	Argentine Republic	22,860
Coropuna	Peru	21,703
Chimborazo	Ecuador	20,498
Misti	Peru	20,320
Cotopaxi	Ecuador	19,480
Tolima	Nevado de Colombia	18,300

EUROPE

Mont Blanc	France	15,780
Monte Rosa	Swiss-Italian Frontier	15,215
Mulahacen	Spain	11,781
Pic de Nethou	Spain	11,170
Mt. Etna	Italy	10,865
Mt. Hecla	Iceland	5,096
Mt. Vesuvius	Italy	4,260

ASIA

Mt. Everest	Himálayas	29,002
Godwin-Austen	Himálayas	28,265
Kánchanjangá	Himálayas	28,156
Mustagh-ata	Pamirs	25,800
Elbruz	Russia	18,525
Demavend	Persia	18,200
Ararat	Armenia	16,925
Fuji-yama	Japan	12,440
Mt. Hermon	Palestine	9,050

AFRICA

Mt. Kenia	Brit. East Africa	19,300
Kilima-njaro	Ger. East Africa	19,270
Mt. Ruwenzori	Brit. East Africa	16,600
Ras Dashan	Abyssinia	15,000
Tizi Tamjurt	Morocco	14.650
Mongo ma Loba	Kamerun	13,000
Mont aux Sources	(Western Frontier of Natal	10,000

OCEANIA

Mauna Kea	Hawaiian Islands	13,953
Mauna Loa	Hawaiian Islands	13,760
Kinabalu	Borneo	13,680
Mount Victoria	New Guinea	13,205
Mt. Cook	New Zealand	12,350

Average Height of Plateaus

	Feet		Feet
Tibet	14,000	Columbia	4,500
Bolivia	12,000	Great Basin	4,000
The Pamirs	12,000	Gobi	4,000
Mexico	8,000	Guiana	2,500
Abyssinia	7,000	Brazil	2,000
Australian	5,000	Switzerland	2,000
Colorado	5,000	Dekkan	2,000

Total Length of Railways of the World

(Based on Statesman's Year Book, 1911)

Continents	Length in Miles
North America	283,724
Europe	202,221
Asia	60,232
South America	37,235
Australia and Islands of the Pacific	19,713
Africa	17,173

Length of Railways in the Different Countries

Countries	Length in Miles
Argentine Republic	16,606
Austria-Hungary	29,378
Belgium	2,942
Bolivia	700
Brazil	12,182
British Empire—	
United Kingdom	23,280
India and other Asiatic Possessions	31,490
Canada, Dominion of	24,731
Australia, Commonwealth of	16,652
British Africa	9,250
New Zealand	2,746
Newfoundland and British West Indies	951
British Guiana (South America)	95
Bulgaria	1,082
Chile	3,290
Chinese Republic	4,730
Colombia	509
Congo, Belgian	400
Costa Rica	404
Cuba	2,380
Denmark	2,115
Ecuador	325
French Republic—	
France	30,000
Algeria and other African Possessions	3,540
Indo-China	1,196
New Caledonia (Pacific Ocean)	100
German Empire—	
Germany	37,000
German Possessions in Africa	1,000
Kiao-Chou, China	272
Greece	850
Guatemala	555
Honduras	60

Length of Railways in the Different Countries
Continued

Countries	Length in Miles
Italy	10,713
Japan	5,400
Cho-sen	642
Luxemburg	340
Mexico	15,350
The Netherlands (Kingdom of)—	
The Netherlands (Europe)	1,908
Dutch East Indies (Asia)	1,538
Nicaragua	171
Norway	1,912
Ottoman Empire—	
Turkey in Europe	1,239
Turkey in Asia	2,836
Egypt	2,212
Panama	47
Paraguay	160
Peru	1,476
Portugal and Portuguese Africa (771)	2,529
Roumania	2,207
Russian Empire—	
Russia in Europe	34,465
Russia in Asia	10,485
Salvador	122
Santo Domingo and Haiti	155
Servia	430
Siam	650
Spain	9,020
Sweden	8,451
Switzerland	3,131
United States (Republic of)—	
United States	238,356
Alaska	222
Porto Rico	290
Hawaii	215
Philippines	[illegible]
Uruguay	1,400
Venezuela	[illegible]

Longest Canadian Railways (1910)

	Miles
Canadian Pacific	10,000
Grand Trunk	3,550
Intercolonial and Prince Edward Island	1,720
Canadian Northern	6,500
Grand Trunk Pacific	1,703

Mileage of Railways in Canada

Year	1906	1907	1908	1909	1910
Steam	21,429	22,446	22,966	24,104	24,731
Electric	814	815	992	989	992

Canals

	Length in miles	No. of Locks	Rise in feet
RIVER ST. LAWRENCE AND LAKES—			
Lachine	8½	5	45
Soulanges	14	5	84
Cornwall	11	6	48
Farran's Point	1	1	3½
Rapide Plat	3⅞	2	11½
Galops	7⅛	3	15½
Murray	5⅛	—	—
Welland	26¾	26	326¾
Sault Ste. Marie	1⅛	1	18
OTTAWA AND RIDEAU RIVERS—			
Ste. Anne's Locks	⅛	1	[illegible]
Carillon	⅞	2	16
Chute à Blondeau	⅛	—	—
Grenville	5¾	5	43¾
Rideau	16½	49	282½
Perth Branch	6	2	26
RICHELIEU AND LAKE CHAMPLAIN—			
St. Ours Lock and Dam	⅛	1	5
Chambly	12	9	74

NOTE 1. The Soulanges Canal takes the place of the Beauharnois Canal.

NOTE 2.—Total length of navigable waters on the Rideau Canal is 126¼ miles.

NOTE 3.—The Trent Canal, which is composed of a chain of lakes and rivers, extending from Trenton, at the mouth of the Trent River in the Bay of Quinte, to Lake Huron, is now under construction.

Some Ocean Trade Routes of the World

(From Bartholomew's Twentieth Century Citizens' Atlas of the World)

Point of Departure	Destination	Distance in Miles	Approximate Time, in Days
Alexandria	London	2,275	6
Alexandria	Liverpool	3,027	14
Algiers	Liverpool	1,664	8
Apia (Samoa)	San Francisco	4,200	14
Bahia	Southampton	4,505	16
Bahia	Liverpool	4,430	19
Batavia	Marseilles	7,178	27
Batavia	Southampton	8,330	36
Bombay	London	6,658	25
Bombay	Liverpool	6,255	27
Bombay	Marseilles	4,924	16
Boston	Glasgow	2,785	10
Boston	Liverpool	2,932	9
Buenos Aires	Southampton	6,126	22
Buenos Aires	Liverpool	6,253	25
Calcutta	Liverpool	7,985	34
Callao	Liverpool	9,895	40
Cape Town	Southampton	6,010	19 –24
Christiania	Hull	558	2
Colon	Southampton	5,252	19
Constantinople	Liverpool	3,015	10

Some Ocean Trade Routes of the World—*Continued*

Point of Departure	Destination	Distance in Miles	Approximate Time, in Days
Copenhagen	Leith, Hull	616	58 hrs.
Fiji Islands	Vancouver	5,235	18
Fiji Islands	Sydney	1,725	6
Genoa	Southampton	2,134	8
Genoa	Glasgow	2,234	10
Gibraltar	London	1,209	5
Gothenburg	London	644	3
Halifax	Liverpool	2,415	7
Havana	New Orleans	583	2
Hobart	London	11,951	41
Hong-kong	Southampton	10,073	39
Hong-kong	Marseilles	8,180	30
Jamaica	Southampton	4,702	16
Lisbon	Liverpool	973	4
Lisbon	Southampton	855	3
Madagascar	Marseilles	6,077	25
Manila	Liverpool	9,575	32
Melbourne	Southampton	11,931	45
Melbourne	Marseilles	9,720	35
Montevideo	Southampton	6,170	22
Montevideo	Liverpool	6,095	25
Montreal	Liverpool	2,850	9
New Orleans	London	4,690	14
New Orleans	Liverpool	4,615	14
New York	Liverpool	3,170	6
New York	Glasgow	3,280	8
New York	Southampton	3,110	6
Odessa	Liverpool	3,335	12
Pernambuco	Liverpool	3,674	13
Portland (Me.)	Liverpool	2,770	8
Port Said	Liverpool	4,050	14
Port Said	Marseilles	1,568	5
Quebec	Liverpool	2,855	8
Rio de Janeiro	Liverpool	5,156	19
Shanghai	Southampton	10,945	43
Shanghai	Marseilles	9,050	36
Shanghai	Vancouver	4,300	19
Singapore	Southampton	8,638	33
Stockholm	London	1,171 and 903	4
Suez	Liverpool	3,274	10
Suez	Marseilles	1,655	[illegible]
Sydney	Southampton	12,491	49
Sydney	Marseilles	10,296	34
Valparaiso	Liverpool	8,748	37
Vera Cruz	Liverpool	5,031	20
Vladivostok	Southampton	11,748	50
Wellington	London	13,343	46
Yokohama	London	11,601	52
Zanzibar	London	6,225	40
Zanzibar	Marseilles	4,745	20
Zanzibar	Hamburg	7,130	36

Trade of Canada in 1910

Country	Exports to	Imports from	Total
British Empire	$165,364,091	$112,312,760	$277,676,851
United States	113,150,778	239,070,549	352,221,327
Other Foreign Countries	22,843,660	40,469,383	63,313,043

Aggregate Trade of Canada

Year	Exports	Imports	Total
1905	$203,316,872	$266,834,417	$470,151,289
1906	256,586,630	294,286,015	550,872,645
1907 (9 months)	205,277,197	259,786,007	465,063,204
1908	280,006,606	370,786,525	650,793,1[illegible]
1909	261,512,159	309,756,608	571,268
1910	301,358,529	391,852,692	693,211,[illegible]

Fisheries, Production of in Canada

Year	1905	1906	1907	1908	1909
Value. Totals	*$29,479*	*$26,279,483*	*$25,499,340*	*$25,451,094*	*$29,629,170*
Cod, dried	3,323	3,353,875	3,372.516	3,152,382	3,753,620
Herring, salted	1,382,[illegible]	1,534,336	1,302,698	1,409,911	1,292,489
Lobsters, preserved	2,624,406	2,522,179	3,198,173	3,273,447	2,721,469
Salmon, preserved	6,623,600	3,778,606	3,280,728	3,485,320	6,456,373

Fisheries, Production of by Provinces

Year	1905	1906	1907	1908	1909
British Columbia	$9,850,216	$7,003,347	$6,122,923	$6,465,038	$10,314,755
New Brunswick	4,847,090	4,905,225	5,300,564	4,754,298	4,676,315
Nova Scotia	8,259.085	7,799,160	7,632.330	8,009,838	8,081,111
Ontario	1,708,953	1,734,856	1,935,625	2,100,078	2,177,813
Prince Edward Island	998,922	1,168,939	1,492,695	1,378,624	1,197,556
Quebec	2,003,716	2,175,035	2,047,390	1,881,817	1,808,436

Copper, Production of

Year	1906	1907	1908	1909	1910
In Canada .... Pounds	55,609,888	56,525,541	63,702,873	52,493,863	56,598,074
In Canada .... $	10,720,474	11,307,369	8,413,876	6,814,754	7,209,463
In Ontario........ $	990,813	1,045,511	1,071,140	1,127,015	1,374,103
In British Columbia........ $	8,288,565	8,166,544		5,918,522	4,871,512

Coal, Production of

Year	1906	1907	1908	1909	1910
In Canada. *Total Tons*........	*9,762,601*	*10,511,426*	*10,886,311*	*10,501,475*	*12,796,512*
In Nova Scotia .... Tons	6,220,505	6,354,133	6,652,539	5,652,080	6,407,091
In British Columbia........ Tons	2,146,262	2,364,898	2,333,708	2,606,127	3,319,168
In Alberta .... Tons	1 246,360	1,591,579	1,685,661	1,894,741	2,824,920

Cement, Production of

Year	1906	1907	1908	1909	1910
In Canada .... Barrels	2,147,774	2,441,868	2,666,333	4,010,180	4,753,975
In Canada .... $	3,170,859	3,781,371	3,709,878	5,266,008	6,414,315
In Ontario........ $	2,381,014	2,777,478	2,417,769	2,897,348	3,144,343

Nickel, Production of in Ontario

Year	1906	1907	1908	1909	1910
Quantity........ Pounds	21,490,955	21,182,793	19,143,111	26,282,991	38,280,000
Value at mines .... $	3,839,419	2,271,616	1,866,059	2,790,798	4,005,961

Silver, Production of

Year	1906	1907	1908	1909	1910
In Canada .... Ounces	8,473,379	12,779,799	22,106,233	27,529,473	31,983,328
In Canada .... $	5,659,455	8,348,659	11,686,239	14,178,504	17,106,604
In Ontario .... Ounces	5,401,766	9,982,363	19,398,545	24,822,099	29,375,000
In Ontario .... $	3,607,894	6,521,178	10,254,847	12,784,126	15,711,513
In British Columbia .... Ounces	2,990,262	2,745,448	2,631,389	2,649,141	2,333 842
In British Columbia .... $	1,997,220	1,793,519	1,391,058	1,364,387	

Gold, Production of

Year	1906	1907	1908	1909	1910
In Canada. *Total* .... $	*11,502,120*	*8,382,780*	*9,842,105*	*9,382,230*	*10,224,910*
In British Columbia........ $	5,579,039	4,883,020	5,929,880	5,174,579	
In Yukon Territory........ $	5,600,000	3,150,000	3,600,000	3,960.000	4,550,000

Lead, Production of

YEAR	1906	1907	1908	1909	1910
In Canada { Pounds	54,608,217	47,738,703	43,195,733	45,857,424	32,987,508
In Canada { $	3,089,187	2,542,086	1,814,221	1,692,139	1,237,032

Asbestos, Production of

YEAR	1906	1907	1908	1909	1910
(Nearly all from the Eastern Townships, Quebec)					
In Canada { Tons	79,410	90,426	90,773	87,300	100,385
In Canada { $	1,988,108	2,505,043	2,573,336	2,301,775	2,476,558

Exports of Canada to Britain

YEAR	1906	1907 (9 months)	1908	1909	1910
Agricultural Products. Totals	*$42,305,048*	*$20,940,654*	*$55,453,583*	*$58,933,165*	*$71,004,416*
Fruits	3,755,490	2,814,803	4,698,585	2,958,689	4,503,680
Grains	32,007,337	22,228,509	43,238,332	48,227,496	51,067,498
Flour and Meal	4,173,453	2,867,826	5,502,035	5,043,559	9,961,174
Animals and their Produce. Totals	*57,758,417*	*48,313,070*	*46,335,833*	*42,997,405*	*41,860,777*
Bacon	11,563,619	9,012,496	10,784,920	8,206,107	6,422,747
Cheese	24,300,908	21,909,879	22,763,736	20,268,166	21,481,566
Cattle	11,364,434	10,448,256	8,890,915	10,280,449	10,058,912
Fisheries Produce. Totals	*6,139,577*	*2,411,102*	*3,502,590*	*3,579,627*	*5,136,215*
Forest Produce. Totals	*12,498,738*	*11,783,564*	*11,843,094*	*9,845,422*	*11,033,074*
Lumber	10,740,698	10,252,498	10,305,890	8,750,722	10,024,960
Square Timber	1,667,361	1,462,914	1,483,190	1,044,273	907,759
Manufactures. Totals	*7,233,232*	*5,036,956*	*7,472,357*	*8,024,398*	*6,610,756*
Leather	2,068,814	1,258,097	1,871,397	2,110,526	1,161,999
Manufactures of Wood	1,672,470	888,685	974,304	1,468,206	1,385,340
Mineral Produce. Totals	*1,475,839*	*1,127,267*	*1,560,842*	*2,986,967*	*3,820,574*

Exports of Canada to Countries other than Britain and the United States

YEAR	1906	1907 (7 months)	1908	1909	1910
Agricultural Products. Totals	*$5,977,325*	*$3,769,081*	*$7,492,667*	*$8,943,798*	*$11,225,081*
Flour and Meal	2,480,443	1,796,268	3,598,537	3,307,480	5,510,635
Grains	1,164,154	739,945	1,689,178	3,707,402	2,724,866
Animals and their Produce. Totals	*1,438,214*	*1,074,400*	*1,036,290*	*987,695*	*1,436,124*
Fisheries Produce. Totals	*5,005,856*	*4,401,665*	*5,546,874*	*5,427,916*	*5,899,896*
Codfish	2,915,171	2,668,994	3,174,230	2,761,362	3,020,109
Forest Produce. Totals	*3,240,392*	*3,294,781*	*4,856,622*	*3,400,592*	*4,648,633*
Lumber	3,197,390	3,193,199	4,765,723	3,375,389	4,537,897
Manufactures. Totals	*7,675,553*	*6,126,925*	*8,649,835*	*9,104,501*	*9,533,880*
Agricultural Implements	2,193,622	2,175,218	2,879,371	3,151,289	3,840,813
Mineral Produce. Totals	*1,124,788*	*997,576*	*2,396,451*	*3,009,870*	*2,777,979*

Exports of Canada to the United States

Year	1906	1907 (9 months)	1908	1909	1910
Agricultural Produce. Totals	*$5,779,964*	*$2,223,941*	*$3,1[illegible]*	*$4,120,244*	*$8,204,250*
Grains	3,238 906	823,085	635,484	1,847,731	2 958,207
Animals and their Produce. Totals	*7,459,329*	*6,035,029*	*7,729,137*	*7,364,546*	*10,629,614*
Living Animals	1,629,031	1,967,913	2,053,831	1,340,783	1,805,341
Hides and Skins	3,420,204	2,543,119	3,398,545	3,844,843	5,392,776
Fisheries Produce. Totals	*4,880,407*	*3,549,375*	*4,817,904*	*4,312,141*	*4,627,051*
Forest Produce. Totals	*23,085,040*	*18,397,753*	*27,470,754*	*26,421,373*	*31,835,326*
Lumber	18,986,872	15,264,589	20,818,751	20,252,698	23,927,619
Wood for Pulp	2,649,106	1,998,805	4,655,371	4,356,391	6,076,628
Manufactures. Totals	*9,652,328*	*7,924,107*	*12,427,258*	*11,828,241*	*15,350,280*
Wood Pulp	2,419,628	2,397,448	3,545,530	3,064,879	4,175,309
Mineral Produce. Totals	*32,869,004*	*24,067,112*	*35,219,840*	*31,260,862*	*33,488,464*
Coal	3,997,467	2,918,067	4,041,562	3,493,337	3,798,623
Gold-bearing Quartz, Nuggets, etc.	12,987,542	7,226,604	8,708,720	7,289,220	5,920,376
Copper	6,611,739	4,885,311	7,579,042	6,212,597	5,685,072
Nickel	1,564,323	1,106,312	1,509,154	1,535,964	2,546,711
Silver	4,205,326	5,335,060	10,206,754	9,937,955	12,015,356
Asbestos	1,036,648	759,907	1,322,890	1,294,568	1,300,457

Imports of Canada from Britain

Year	1906	1907 (9 months)	1908	1909	1910
Agricultural Produce	$2,047,760	$1,530,415	$2,174,709	$2,186,840	$2,103,366
Animals and their Produce	4,001,313	3,220,696	3,042,913	2,523,213	4,386,139
Manufactures	57,232,427	54,316,829	82,249,276	60,175,413	82,302,756

Imports of Canada from the United States

Year	1906	1907 (9 months)	1908	1909	1910
Agricultural Produce	$18,606,611	$18,889,940	$24,543,472	$19,890,388	21,233,419
Animals and their Produce	10,043,475	8,630,441	10,085,695	9,813,929	11,836,463
Forest Produce	6,050,611	5,800,676	10,043,265	6,204,843	8,050,772
Manufactures	100,246,392	88,541,601	116,577,079	93,723,441	131,691,421
Mineral Produce. Totals	*23,655,116*	*21,142,200*	*34,490,499*	*32,735,517*	*34,798,366*
Coal, Anthracite	10,141,350	9,405,230	14,064,434	13,886,861	14,300,004
Coal, Bituminous	8,316,150	7,409,091	14,788,845	13,011,248	12,979,151

The Leading Commercial Countries

(Based on the Statesman's Year Book, 1911, and Chisholm's Handbook of Commercial Geography)

COUNTRY	PRINCIPAL PRODUCTS	PRINCIPAL EXPORTS	TOTAL VALUE OF EXPORTS
Afghanistan	Fruits, felt, wool	Horses, fruits, grain	$ 3,480,000
Algeria	Wine, wool, wheat, cork	Wine, wool, wheat, cork	93,000,000
Argentine Republic	Animal products, wheat	Animal products, wheat	350,000,000
Australia	Wool, gold, wheat	Gold, wool	325,000,000
Austria-Hungary	Cereals, coal, iron	Sugar, animals, animal products, coal.	480,000,000
Belgium	Cereals, coal, iron	Coal, woollens, linens, iron, steel	561,000,000
Bolivia	Minerals, rubber	Silver, tin, rubber	18,248,000
Brazil	Coffee, rubber, tobacco, cocoa	Coffee, rubber, tobacco, cocoa	375,000,000
Bulgaria	Wheat, live stock	Grain, animal food, food products	19,000,000
Canada	Grain, timber, metals	Timber, cheese, wheat	375,783,000
Cape of Good Hope	Diamonds, gold, wool	Diamonds, gold, wool	232,000,000
Ceylon	Tea, cocoa, plumbago, rubber	Tea, cocoa-nut products, plumbago	50,000,000
Chile	Minerals, cereals, guano	Nitre, copper, iodine	110,000,000
China	Cereals, tea, silk	Silk, tea, cotton	220,000,000
Cho-sen	Gold, grain, ginseng	Gold, rice, ginseng	8,124,000
Colombia	Gums, coffee, precious metals	Gums, coffee, gold	15,516,000
Costa Rica	Coffee, bananas	Coffee, bananas	7,900,000
Cuba	Sugar, tobacco	Sugar, tobacco, cigars	115,637,000
Denmark	Dairy products, cereals	Provisions, animals, cereals	168,000,000
Dutch East Indies	Coffee, tea, sugar	Coffee, tea, sugar	199,800,000
Ecuador	Cacao, ivory nuts, coffee	Cacao, ivory nuts, coffee	15,000,000
Egypt	Cotton, cereals, sugar	Cotton, cereals, provisions	130,000,000
France	Cereals, wine, sugar	Textiles, yarn, wine	1,490,000,000
Germany	Cereals, coal, iron, potatoes	Textiles, hardware, chemicals	1,880,000,000
Greece	Cereals, fruits, tobacco	Currants, ores, olive-oil	20,250,000
Guatemala	Coffee, sugar, bananas, timber	Coffee, timber, hides	10,079,000
Haiti	Coffee, woods, cacao	Coffee, woods, cacao	2,275,000
Hawaii	Sugar, rice, coffee	Sugar, rice, coffee	46,000,000
India	Cereals, cotton, oil-seeds	Cotton, rice, oil-seeds	530,000,000
Italy	Silk, fruit, grain	Silk, olive-oil, sulphur	370,000,000
Jamaica	Sugar, coffee, fruit	Fruit, sugar, rum	11,000,000
Japan	Cereals, tea, silk	Silks, cotton yarn, coal	225,000,000
Madagascar	Gold, cattle, rice	Gold, cattle, raffia	6,600,000
Mexico	Metals, henequen, animals	Metals, henequen, animals	130,000,000
Morocco	Grain, eggs, almonds	Grain, eggs, almonds	10,000,000
Natal	Coal, sugar, cereals	Coal, wool, sugar	19,000,000
Netherlands	Cereals, textiles, dairy products	Cereals, hardware, textiles	1,023,000,000
Newfoundland	Fish, iron, coal	Fish, iron ore, fish oil	10,500,000
Norway	Timber, fish, animals	Timber, fish, paper	97,700,000
Orange Free State	Diamonds, coal, sheep	Diamonds, garnets, sheep	18,000,000
Panama	Fruit, coffee, rubber	Fruit, coffee, rubber	1,500,000
Paraguay	Paraguay tea, fruit, cattle	Paraguay tea, tobacco, hides	5,100,000
Persia	Fruit, cotton, opium	Fruit, cotton, opium	30,900,000
Peru	Metals, sugar, cotton	Metals, sugar, cotton	3,065,000
Philippines	Hemp, copra, sugar, tobacco	Hemp, tobacco, sugar	39,864,000
Porto Rico	Coffee, sugar, tobacco	Sugar, tobacco, coffee	37,960,000
Portugal	Wine, cereals, fruit	Wine, cork, canned fish	35,400,000
Roumania	Grain, sheep, cattle	Grain, fruit, wood	93,000,000
Russia	Grain, petroleum, fibres	Grain, raw materials, animal products.	722,000,000
Salvador	Coffee, indigo, tobacco, sugar	Coffee, indigo, sugar	3,650,000
Santo Domingo	Sugar, cacao, tobacco	Sugar, cacao, tobacco	8,113,000
Servia	Grain, plums, animals	Animal products, grain, prunes	18,000,000
Siam	Rice, teak, sea products	Rice, teak, sea products	38,700,000
Spain	Grain, fruits, minerals	Wine, minerals, fruit	185,000,000
Straits Settlements	Tin, gums, pepper	Tin, gums, spices	171,600,000
Sweden	Timber, iron, grain	Timber, animals, metals	130,200,000
Switzerland	Dairy products, animals, fruits	Silk, cottons, clocks, watches	238,000,000
The Transvaal	Gold, coal, sheep	Gold, coal, wool	170,000,000
Turkey	Tobacco, cereals, fruits	Grapes, silk, wheat	68,600,000
United Kingdom	Textiles, steel manufactures	Textiles, steel manufactures	2,152,000,000
United States	Cereals, cotton, minerals	Cotton, grain, railway supplies	1,710,000,000
Uruguay	Animal products, grain	Meat, hides, grain	49,000,000
Venezuela	Coffee, cacao, animals	Coffee, cacao, hides	16,000,000
Zanzibar	Spices	Cloves	5,000,0000

Their Productions, Exports, and Imports

(Based on the Statesman's Year Book, 1911, and Chisholm's Handbook of Commercial Geography)

Principal Imports	Total Value of Imports	Principal Ports	Country
Cotton, indigo, sugar, tea	$ 4,225,000		Afghanistan.
Cottons, skins, machinery	100,000,000	Algiers	Algeria.
Textiles, carriages, iron	333,000,000	Buenos Aires	Argentine Republic.
Machinery, cottons, woollens	314,000,000	Adelaide, Melbourne, Sydney	Australia.
Wool, cotton, coal, tobacco	550,000,000	Trieste	Austria-Hungary.
Foodstuffs, timber, wool	740,000,000	Antwerp	Belgium.
Cottons, woollens, hardware	14,774,000		Bolivia.
Foodstuffs, cottons, coal	280,000,000	Rio de Janeiro, Bahia, Santos	Brazil.
Textiles, metals, machinery	28,000,000	Varna	Bulgaria.
Steel manufactures, coal, woollens	391,852,000	Quebec, Montreal, Halifax	Canada.
Textiles, food products	88,946,000	Cape Town, Port Elizabeth, E. London	Cape of Good Hope.
Grain, coal, cottons	45,000,000	Colombo	Ceylon.
Textiles, minerals, oils, machinery	98,000,000	Valparaiso, Iquique	Chile.
Cottons, opium, rice	272,000,000	Shanghai, Canton	China.
Cottons, silks, oil	18,324,000	Chemulpo	Cho-sen.
Flour, salt, petroleum	10,561,000	Barranquilla, Cartagena	Colombia.
Foodstuffs, dry goods, hardware	5,900,000	Puerto Limon	Costa Rica.
Textiles, rice, food products	98,230,000	Havana, Santiago de Cuba	Cuba.
Provisions, textiles, hardware	201,300,000	Copenhagen	Denmark.
Cottons, manure, hardware	116,000,000	Batavia, Surabaya	Dutch East Indies.
Cottons, woollens, hardware	9,300,000	Guayaquil	Ecuador.
Cottons, coal, wood	111,000,000	Alexandria, Port Said	Egypt.
Wool, raw silk, coal	1,570,000,000	Marseilles, Le Havre, Bordeaux	France.
Provisions, raw materials, oil	2,150,000,000	Hamburg, Bremen, Stettin	Germany.
Cereals, yarns, coal	27,600,000	Piraeus, Patras	Greece.
Cottons, provisions, beverages	5,251,000	San José, Puerto Barrios	Guatemala.
Cottons, sacks, hardware	4,606,000	Port au Prince	Haiti.
Manufactured goods, foodstuffs	25,137,000	Honolulu	Hawaii.
Cottons, hardware, sugar	505,000,000	Calcutta, Bombay, Rangoon	India.
Grain, cotton, coal	620,000,000	Venice, Genoa, Leghorn	Italy.
Cottons, fish, flour	12,000,000	Kingston, Port Antonio	Jamaica.
Cottons, sugar, hardware	230,000,000	Yokohama, Nagasaki	Japan.
Cottons, rice, wine	6,800,000	Tamatave	Madagascar.
Hardware, textiles, coal	97,000,000	Vera Cruz, Tampico	Mexico.
Cottons, sugar, tea	18,800,000	Tangier	Morocco.
Hardware, dry goods, provisions	39,000,000	Durban	Natal.
Cereals, iron, textiles	1,307,000,000	Rotterdam, Amsterdam	Netherlands.
Flour, textiles, provisions	11,500,000	St. John's	Newfoundland.
Provisions, metals, textiles	101,600,000	Christiania, Bergen, Trondhjem	Norway.
Dry goods, food, hardware	23,000,000		Orange River Colony.
Cottons, flour, provisions	8,700,000	Panama, Colon	Panama.
Textiles, hardware	3,750,000		Paraguay.
Cottons, sugar, woollens	40,000,000	Bushire	Persia.
Breadstuffs, hardware, cottons	2,175,000	Callao	Peru.
Rice, flour, wine	37,067,000	Manila	Philippines.
Cottons	30,635,000	Ponce, San Juan, Mayaguez	Porto Rico.
Cottons, coal, codfish	74,000,000	Oporto, Lisbon	Portugal.
Textiles, metals, hides	73,000,000	Galatz	Roumania.
Raw materials, manufactures	416,000,000	St. Petersburg, Odessa	Russia.
Cottons, breadstuffs, woollens	3,745,000	Acajutla, Libertad	Salvador.
Cottons, hardware, provisions	4,425,000	Puerto Plata, Samana	Santo Domingo.
Cottons, metals, woollens	14,200,000		Servia.
Cottons, sacks, opium	26,000,000	Bangkok	Siam.
Grain, cotton, timber	190,000,000	Barcelona, Cartagena, Malaga	Spain.
Rice, cottons, opium	191,200,000	Singapore	Straits Settlements.
Coal, metal goods, yarns	169,800,000	Gothenburg, Stockholm	Sweden.
Foodstuffs, silk, metals	340,000,000		Switzerland.
Hardware, clothing, provisions	95,000,000		The Transvaal.
Cottons, sugar, coffee	126,000,000	Constantinople	Turkey.
Breadstuffs, meat, cotton	3,392,000,000	London, Liverpool, Glasgow	United Kingdom.
Sugar, chemicals, coffee	1,556,000,000	New York, Boston, New Orleans	United States.
Food, machinery, textiles	40,000,000	Montevideo	Uruguay.
Textiles, hardware, provisions	10,000,000	La Guaira, Puerto Cabello, Maracaibo	Venezuela.
Textiles, coal	4,900,000	Zanzibar	Zanzibar.

SELECTED LIST OF GEOGRAPHICAL NAMES

KEY TO PRONUNCIATION

ā as *a* in ale.
ă " *a* " am, carry.
ah " *a* " arm, car.
aw " *a* " all.

ē " *e* " eve.
ĕ " *e* " end.

ī as *i* in ice.
ĭ " *i* " ill.

ō " *o* " old.
ŏ " *o* " odd.

ū " *u* " use.

ŭ as *u* in up.

ōō " *oo* " food.
ŏŏ " *oo* " foot.

ow " *ow* " cow.

ch as *ch* in chair.

g " *g* " go.

ng " *ng* " sing.

zh " *z* " azure.

Name	Pronunciation
Aar	ahr.
Abitibi	ah-bē-tib'-bē.
Abyssinia	ab is-sin' e-a.
Acapulco	ah-kah-pool'-ko.
Acarai	ah kah-rē'.
Achill	ak'-il.
Aconcagua	ah-kōn-kah'-gwah.
Adelaide	ad'-e-lād.
Aden	ā' den.
Adige	ăd'-ē-jā (ah'-de-jā).
Adirondack	ăd-ĭ ron'-dak.
Adrianople	ăd-re ăn-ō'-p'l (ăd-rē-a-nō'-pl).
Adriatic	ăd re ăt-ik (ā-dri-at'-ik).
Ægean	ē-jē' an.
Afghanistan	ahf-gahn-is-tahn'.
Agassiz	ăg'-as sē.
Aix-la-Chapelle	āks-lah shah pĕl'.
Ajaccio	ah-yaht'-cho.
Alabama	ăl ā-bah'ma.
Alaska	ah-las'-kah.
Albany	awl'-bă-nē.
Alberni	ăl-ber'-nē.
Alberta	ăl-ber'-ta.
Albuquerque	ahl'-boo-kar'-ka.
Aleutian	ah-lu'-shan.
Alexandria	ăl-egs-an'-drī-ah (ăl-eks).
Algiers	ăl jeerz'.
Allegheny	ăl'-le-gā-nē.
Allumette	ahl-lū-met'.
Alma	ăl'-mă.
Alsace	ahl-sahs'.
Altai	ahl-tī'.
Amazon	ăm'-ā zŏn.
Amiens	am' ī-enz.
Amsterdam	ăm'-ster-dăm.
Amur	ah-moor'.
Andes	ăn'-dēz.
Andorra	an-dŏr' ra.
Angers	ahn-zhā'.
Anglesey	ang'-g'l-sē.
Annapolis	ăn-năp-ō lis.
Antarctic	ant-ark'-tik.
Anticosti	an tī-kos'-tī.
Antigonish	ant'-ig-o nish.
Antigua	ahn-tē' gwah.
Antilles	ahn-til'-lēz.
Appalachian	ap-pa-lā' chī-an(ap-pa-lăch'-i-an).
Apennines	ăp'-en ninz.
Apure	ah-pōōr'-ra.
Aral	ăr' al (ahr-al).
Ararat	ăr'-ā-rat.
Archipelago	ahr-kī-pel'-ā-gō.
Ardennes	ahr den'.
Arequipa	a[illegible] kee'-pah.
Argenteuil	ahr-zhōn-tū'y'.
Argentina	ahr jēn-tee'-na.
Argyle	ahr gīl'.
Arica	ah-rē' kah.
Arichat	ar'-ī-shat.
Arizona	ar-ī zō' na.
Arkansas	ahr'-kan-saw.
Armagh	ahr-mah'.
Aroostook	ā-rōōs'-tŏŏk.
Ashtabula	ăsh' ta bū'-la.
Asia	ā' she a.
Assiniboia	as-sin ī boi'-a.
Assiniboine	as-sin'-ī boin.
Assuan	ahs-swahn'.
Astrakan	ăs'-tra-kăn'.
Asuncion	a sōōn'-se-on.
Atacama	ah-ta-kah'-ma.
Athabaska	ăth-ā băs'-kă.
Athens	ăth' ĕnz.
Atlas	ăt'-las.
Australia	aws-trā'-lī-a.
Austria	aws'-trī-a.
Auvergne	ō'-ver'-nye.
Avon	āv'-ŭn.
Aylmer	āl'-mŭr.
Ayr	air.
Azores	ah-zorz'.
Azov	ā'-zov (ah-zov').
Baden	bah'-den.
Bagot	bah gō'.
Bahama	bah-hā'-mah.
Bahia	bah-e'-ah.
Baikal	bī' kahl.
Baku	ba-kōō'.
Balearic	băl-e ăr' ik.
Balkan	bahl kahn'.
Baltimore	bawl'-tī-mōre.
Baluchistan	bă-loo' chis-tahn'.
Banff	bamf.
Bangkok	ban-k[illegible]
Barbados	bahr-bā'-dōz.
Barcelona	bahr-sē-lō'-nah.
Barranquilla	bahr'-ran-kēl'-ya.
Basel	bah' zĕl.
Batavia	ba-tā'-vī-a.
Baton Rouge	bat'-un-rōōzh.
Batum	bah-tōōm'.
Beauce	bōce.
Beauharnois	bō-hahr-nwa(h').
Bechuanaland	bĕtch-ŏŏ ah'-nă-land.
Bedeque	bē-dĕk'.
Beirut	bā'root.
Bering	bē'-ring.

SELECTED LIST OF GEOGRAPHICAL NAMES

Name	Pronunciation
Belfast	bĕl-fast'.
Belgrade	bĕl grād'.
Belize	bĕ-leez'.
Bellechasse	bĕl shahs.
Belle-Isle	bĕl ile'.
Belleville	bĕl' vil.
Benares	bĕn ah' rĕs.
Bengal	bĕn gawl'.
Benin	bĕn ēn'
Ben Nevis	bĕn nĕv'-is.
Bergen	bĕr gĕn.
Berlin	bĕr lin'.
Bermudas	bĕr-mū' dĕz.
Berne	bĕrn
Berthier	bĕr te ā'.
Bhutan	bōō tahn'.
Biafra	be af' ra.
Biarritz	be ahr rĕtz.
Birmingham	bĕr'-ming-am.
Biscay	bis' kā.
Blanc (Mont)	mong blong.
Blenheim	blen'-im.
Bloemfontein	bloom'-fōn-tīn'.
Bluefields	blū feldz'.
Bogotá	bō gō' tah.
Bohemia	bō hē'-mia.
Bokhara	bō-kah' rah.
Bolivia	bō liv' ī-ā.
Bologna	bō lōn' ya.
Bonaventure	bon-a-vĕnt'-cher.
Bonifacio	bō-nē faht'-cho.
Bordeaux	bōr dō'.
Borneo	bōr' nē-ō.
Bosporus	bŏs' pō rŭs.
Boulogne	boo-lōne'
Bourbon	boor'-bŭn.
Brahmaputra	brah-mā-poo'-trā.
Braich y Pwll	brī'-ke-pool.
Bras d'Or	brah-dōr'.
Brazil	brā zil'.
Brazos	brah'zōs.
Bremen	brĕm'-en.
Breslau	brĕs'-lou.
Breton	brit'-un (brĕt-ŭn).
Brindisi	brēn' dē sē.
Britain	brit' t'n.
Buchan Ness	bŭk'-an-ness.
Budapest	boo'-da-pest.
Buenos Aires	bō nŭs ā'-riz.
Bukarest	bū ka-rest'.
Bukhara	bō-kah' ra.
Burma	bur'-ma.
Butte	būte.
Cacouna	kah koo-nah'.
Cadiz	ka' diz.
Caicos	kī-'kōs.
Cairo	kī' rō
Calais	kal'-is (kah-lā').
Calcutta	kăl kut'-ta.
Calgary	kăl'-gah' re.
Callao	kahl-lah'-o.
Calumet	kăl'-u met.
Cambrian	kăm' brī-en.
Cambridge	kām' bridge.
Campbellton	kăm'-el tun.
Campeche	kahm pĕ'-che.
Canaan	kā'-nān.
Canso	kăn'-sō.
Canton	kăn-ton'.
Caracas	kah-rah'-kahs.
Caraquet	kah-rah-ket'.
Cardiff	kahr'-diff.
Caribbean	kăr-ib-bē' an
Carillon	kah-reel-yon'.
Carmarthen	kahr mahr'-then.
Carolina	kăr-o-līn'-ā.
Carpathian	kahr pā' thi-an.
Cassiar	kas' sī-ahr.
Cassiquiari	kah sē kē-ah'-rē.
Catoche	kah tō' che.
Caucasus	kaw' kah-sŭs.
Caughnawaga	kaw-nah-waw'-gah.
Causses	kōs.
Cavan	kăv'-ăn.
Cayenne	kā ĕn (kī-ĕn').
Celebes	sĕl ē bēz.
Cenis	se-nē'.
Cettinje	set tēn'-yā.
Ceuta	sū ta
Cevennes	sa vĕnn'.
Ceylon	sē-lōn' (sīl on').
Chad	chahd.
Chaleur	shah-loor'.
Chambly	shahm'-blē.
Champlain	shăm plāne'.
Charlevoix	shahr le-voi' (vwa).
Charlo	shahr'lō.
Chateauguay	shah-tō gā'.
Chatham	chăt' am
Cherbourg	sher-bourg.
Cherra Punji	chĕr rah-poon'-jē.
Chesapeake	ches' ā-pēk.
Cheshire	chĕsh'-ir.
Cheviot	chĕv' ē ut.
Cheyenne	shī-enn'.
Chicago	shī kaw'-go.
Chicoutimi	she koo'-tē-mē.
Chidley	chid'le.
Chignecto	shig nĕk'tō.
Chili	chil' lē.
Chilkat	chil' kat.
Chilliwack	chil' lē-wăk.
Chiltern	chil'-tern.
Chimborazo	chim-bō rah'-zō.
Christian	kris-tē ah'-nē-ah.
Cienfueg	sē-ĕn-fwā'-gōce.
Cinci	sin-sin nah'-te.
Ciuda rigo	the-ōō-dad' rod-rē-gō.
Coatico	kō at'-ī-kook.
Cobequi	kōb'ē'-kwid.
Coburg	kō' bŭrg.
Cochin	kō chin.
Colog	ko lōne'.
Colon	kō lōne'.
Colora	kŏl-o-rah'-do.
Conne	kŏn-net'-ī kŭt.
Consta	kŏn-stan-ti nō'-p'l.
Copenha	kō-pen-hā'-gen.
Cordova	kŏr'-dō-vah.
Corinth	kŏr'-inth.
Corrientes	kŏr-rē-en'-tĕs.
Corsica	kŏr'-sī-kah.
Cotopaxi	kō tō-pak'-sē.
Cowichan	[illegible] itch an
Crimea	[illegible]
Cromarty	[illegible] te
Curaçao	[illegible] h'-o
Cuzco	[illegible]
Cyclades	[illegible]
Dahomey	[illegible]
Dekota	[illegible]
Dalhousie	[illegible]
Danube	[illegible]
Danzig	[illegible] n).

Name	Pronunciation
Dardanelles	dahr-da nelz'.
Darien	dā-re ĕn'
Delaware	dĕl ah ware.
Delhi	dĕl'ĭ (dĕl'-hī).
Deloraine	dĕl-o-rān'.
Demerara	dĕm-ĕr ah'-rā.
Deseronto	dĕs-ĕr-ŏn'-tō.
Des Moines	dĕ-moin'.
Detroit	dĕ-troit'.
Devon	dĕv' on.
Dieppe	dē ĕpp'.
Dijon	dē-zhōn'.
Dnieper	nē' per.
Dniester	nē' ster.
Dominica	dŏm-ĭ nee-kah.
Dovrefjeld	dō vrĕ fe eld'.
Drave	drāve (drah -veh).
Drogheda	drŏh' he dah.
Duluth	dū looth'.
Dumfries	dŭm freece'.
Dundas	dŭn-dăs'.
Dunedin	dŭn-ē'-dĭn.
Dvina	dve'nah.
Dyea	dī-ē' ah.
Earn	[illegible].
[illegible]	ē' brō.
Ecuador	ĕk-wah dōr'.
Edinburgh	ĕd'-in-bŭr-roo (ĕd'-in-bŭrg).
Egypt	ē'-jipt.
Elbe	ĕlb.
Eleuthera	ē lū' thĕr-ah.
Elgin	ĕl'-gin.
Ellice	ĕl' lis.
El Paso	ĕl-pah'-sō.
England	ing'-gland.
Erebus	ĕr'-ē-bŭs.
Erie	ē'-rē.
Erzgebirge	ĕrts-gĕ-bĕr'-gĕ.
Escuminac	ĕs-kū' min-ak.
Esquimalt	ĕs kwī'-malt.
Essequibo	ĕs-seh-kwee'-bō'.
Etchemin	ĕt'-chē-min.
Etna	ĕt-nah.
Euboea	ū bē'-ah.
Euphrates	ū-frā'-tēz.
Europe	ū'-rŭp.
Everest	ĕv'-ĕr-ĕst.
Eyre	air.
Falkland	fawk'-land'.
Falmouth	făl'-mouth.
Fermanagh	fŭr-man'-ah.
Fiji	fē-jē.
Florence	flŏr'-ence.
Florida	flŏr'-ĭ dah.
Fredericton	fred'-er ik-tŭn.
Foochow	foō'-chow.
Funchal	foōn-shahl'.
Fundy	fŭn'-dĭ.
Funen	foō' nen.
Fuji-yama	foo-jē yah'-mah.
Gabarus	gah-ba-roos'.
Gaeta	gah-ā' tah.
Galapagos	găl-a pā'-gōs.
Galicia	gah lish'-ĭ ah.
Gallinas	gal lē'nas.
Galway	gawl'-way.
Gananoque	gan-an-ŏk'-kwe.
Ganges	gan'-jēz.
Garonne	gah rŏn'.
Gaspé	gas'-pē (gahs-pā').
Gatineau	gah-tē nō'.
Gebirge	gĕ bĕr'gĕ.
Genoa	jen'-ō-ah.
Ghent	gĕnt.
Ghizeh	gē' zeh.
Gibraltar	jĭ brawl'-ter.
Gironde	jĭ rond'.
Glace	glāce.
Glasgow	glăs'-gō (glas'-kō).
Gleichen	glī' ken.
Gloucester	glos' ter.
Gobi	gō' bē.
Godavery	gō dah'-ve-re.
Goderich	gŏd'-rich.
Gothard	gŏth'-ahrd.
Gothenburg	gŏt' en bŭrg.
Gracias a Dios	grah'-sē-ahs-ah-dē ōos'.
Granada	grah nah'-dah.
Greenock	green'ock (grēn'-uk).
Greenwich	grin'-ij (grĕn'-ij).
Grenada	grĕn-ā' dah.
Guadalajara	gwah-dahl ah hah'-ra.
Guadalquivir	gwah-dahl kwiv'-er.
Guadeloupe	gah dĕ [illegible]'.
Guam	gwahm.
Guardafui	gwahr'-dă-fē.
Guatemala	gaw tē-mah'-la.
Guayaquil	gwī a kēl'.
Guayra	gwī'-rah.
Guelph	gwĕlf.
Guernsey	gurn'-zē.
Guiana	gē ah'-nah.
Haarlem	hahr'-lĕm.
Hague	hag.
Hainan	hī nahn'.
Haiti	hā'-tĭ.
Halle	hahl'-leh.
Hanoi	hah-noi'.
Havana	hah-văn'-ah.
Haverhill	hā'-vĕr-ĭl.
Havre	ahvr.
Hawaii	hah-wī'-ē.
Hebrides	hĕb'-ri-dēz.
Hecate	hĕk'-ā-tē.
Heidelberg	hī'-del-bŭrg.
Helena	hĕl'-ē-nah.
Herat	hē raht'.
Herzegovina	hĕrt sē-gō-vē'-nah.
Himalaya	hī-mah'-la-yah (him-ā-lā'-yah).
Hindo Koosh	hin'-doo koōsh'.
Hobart	hō'-bert.
Hochelaga	hŏsh ē-lah'-gah.
Honduras	hon-dū'-ras.
Honolulu	hō-nō-loo'-loo.
Hoogly	hōō' glē.
Houston	hūs'-tŭn.
Howth	hōth.
Hyderabad	hī-dŭr-ah-bad'.
Iberville	ē-bār-vēl'.
Idaho	ī-da-ho.
Illecillewaet	ĭl lē-sil'-lē-wet.
Illimani	el-ye-mah'-nē.
Illinois	ĭl-lĭn oi'.
Indiana	in de-ăn'-ah.
Indianapolis	in de an ap'-ō-lis.
Indus	in'-dŭs.
Inverness	in vĕr-ness'.
Iona	ī'-ō'-nah (ē-ō'-nah).
Iowa	ī'-o wah.
Iquique	ē kē'-kā.
Irak Arabi	ē-rak' ahr'-a-be.

NAME	PRONUNCIATION
Iran	ē rahn
Irawadi	ir-ah wah'-dĭ.
Ireland	ir land.
Irkutsk	ir koōtsk'
Iser	ē' zer.
Islay	ī' lā.
Ismailia	ēs mah ē'-lē ah.
Itasca	ī tas'-kah.
Iviça	ē vē sah
Ixtaccihuatl	ēs-tak sē'hwatl.
Jacques Cartier	zhak kahr tē ā'.
Jacquet	jak' et.
Jamaica	jah mā' kah.
Java	jah'-vah
Jedo	[illegible]' dō.
Jena	[illegible]' nah.
Jerusalem	j[illegible] ū' sā lem.
Johannesburg	[illegible] hahn'-nes-burg.
Joliet	[illegible]-lĭ ēt.
Juan de Fuca	jū an dē-fū'-ka (wan-dā-foo'-ka)
Juneau	jū-nō'
Jungfrau	yoong'-frow.
Kábul	kah-bool'.
Kamchatka	kahm-chăt'-kah.
Kamouraska	kah moo-rahs'-ka.
Karachi	kŭ-rah' che.
Karakorum	kah rah-kō'-rum.
Karroo	kah-rōō'.
Kaslo	kaz' lō.
Kassala	kahs-sah'-lah.
Katahdin	kah-tah'-din.
Katrine	kăt'-rin.
Keewatin	kē wah'-tin.
Kelat	ke-laht'.
Kennebecasis	kĕn nē bĕk-ā'-sis.
Kenora	kē nō'-rā.
Khartoum	kahr-toom'.
Khiva	kē'-vah.
Khyber	kī'-bŭr.
Kiel	keel.
Kiev	kē'-ev.
Kilimanjaro	kil-e mann-jah'-ro.
Kincardine	kin-kahr' dĭn.
Kirkcudbright	kĭr-koō'-brē.
Kjölen	ky-ōō'-len.
Kootenay	koō'-ten ā.
Korea	kō-rē'-ah.
Kuen Luen	kwen-loōn'.
Kurile	koō'-ril.
Kuro Shiwo	kōō-rō-shē'-wō.
Kyoto	kē ō'-tō.
La Beauce	lah bōce'.
Labelle	lah bel'.
Labrador	lăb' rā-dōr.
Labuan	lah boō ahn'.
Laccadive	lak' kah-dive.
Lachine	lah shēn'.
Ladoga	lah-dō'-gah.
Ladrones	lah-drōnz'.
La Guayra	lah-gwī'-rah.
Lahave	lah-hāv'.
Lanark	lăn'-ark.
La Paz	lah-pahz'.
La Plata	lah-plah'-tah.
La Prairie	lah prā'-rē.
L'Assomption	lahs-sōn-se-on'.
Laurentian	law-rĕn'-shi-an.
Lausanne	lō zahn'.
Laval	lah-vahl'.
Lebanon	lĕb'-ā-nun.
Leipzig	līp[illegible]
Lepreau	le prō
Letite	le tēt'.
Levant	le vant'.
Levis	le vē.
Leyden	lī' dĕn.
Lhassa	lhah sah'.
Liege	le āzh'.
Lille	lēl
Lillooet	lil'loo ēt.
Lima	lē'mah.
Limoges	le mōzh'.
Lincoln	link'-ŭn.
Lipari	lip' ah rē.
Lisbon	liz' bŭn.
[illegible]	le la'
Listowel	lis-tō' el.
Llanelly	lah neth'-l[illegible]
Llanos	lah' nōz
Loch Linnhe	lŏk lin' nē.
Lofoten	lō fō'-ten.
Loire	lwahr.
Longueuil	long-gale' (lon-gā'y).
L'Orignal	lō-reen-yahl'
Los Angeles	lōs ang' gĕl ēs (lŏs an'-jel-ēs).
Lotbiniere	lōt bē nī ār'.
Louisburg	loō'-is-bŭrg.
Louisiana	loo ē-zē-ah'-nah.
Lourenço Marques	lō ren'-sō mahr'-kēs.
Louth	lowth.
Lucknow	lŭk'-now.
Luzon	loō zōn'.
Lyons	lī' ŭns.
Macao	[illegible]ah-kah'-o.
Macon	mā' kŭn.
Madagascar	mad ah găs'-kahr.
Madame	mah dahm'.
Madawaska	mad-ah-wŏs'-kah.
Madeira	mah-dē' ra.
Madras	mah drăs'.
Madrid	mah drĭd'.
Mafeking	mah-fē-king'.
Magaguadavic	măk ā dā'-vē.
Magdalen	măg' dā len.
Magellan	mah jel'-lan.
Maggiore	mahd jō'-rā.
Magog	mā'-gŏg.
Malacca	mah-lak'-ka.
Malaga	mah lah-gah.
Malay	mah lā'.
Manan	man ăn'
Manitoba	man-ĭ-tō'-bah.
Manitoulin	man-ĭ-too'-lin.
Maracaibo	mah-rah-kī'-bō.
Marmora	mahr'-mō-rā.
Marquesas	mahr-kā'-sahs.
Marseilles	mahr-sālz'.
Martinique	mahr tĭ nēk'.
Mascareen	măs-ka rēn'.
Maskinonge	măs-kē-nŏnj'.
Massachusetts	măs sā-chū'-sĕts.
Massowa	mahs sow'-ah.
Matamoros	mat-a-mō-ros.
Matanzas	mah-tăn'-zās.
Matapedia	măt-ah-pē'-dĭ ah.
Mattawamkeag	mat-ta-wŏm'-kēg.
Maugerville	mā'-jĕr-vĭl.
Mauna Kea	mou'nah-kā'ah.
Mauritius	maw-rish'-ĭ-us.
Mecca	mĕk'-ka.
Medina	mā-dē'-nah.
Megantic	mē-găn'-tik.

Name	Pronunciation
Melbourne	mĕl'bŭrn.
Memphremagog	mĕm-frē-mā'-gog.
Menai	mĕn-ī.
Mendocino	mĕn-dō-sē'-nō.
Mer de Glace	mŭr-dĕ-glăs'.
Merthyr Tydvil	mŭr-thŭr tĭd'-vĭl.
Messina	mĕs-sē'-nah.
Meteghan	mĕt-ā'-găn.
Meuse	mŭz.
Michigan	mish'-ĭ găn.
Michipicoten	mish-ĭ-pĭ-kō'tĕn.
Milan	mĭl'-an (mil-an').
Milwaukee	mil-waw'-kē.
Minas	mi'nas.
Mindanao	men-da-nah'-o.
Minneapolis	mĭn nē-ap'-ō-lis.
Minnesota	min-nē-sō'-ta.
Minorca	min-or'-ka.
Miquelon	mik-ĕ-lon'.
Miramichi	mĭr-a-mē-shē'.
Miscou	mis'-koō.
Missisquoi	mis-sis'-kwoi.
Mississippi	mis-is-sip'-pē.
Missouri	mis-soo'-rē.
Mitylene	mit-ĭ-lē'-nē.
Mobile	mō-bēl'.
Mocha	mō'-kah.
Mohave	mo-hah'-va.
Moluccas	mō-lŭk'-kaz.
Mombasa	mŏm-bah'-sah.
Monaco	mŏn'-ah-kō.
Monaghan	mŏn'-ă-han.
Montague	mŏn'-tă-gū.
Montana	mŏn-tah'-nah.
Montauk	mŏn-tawk'.
Montcalm	mŏnt-kahm'.
Montenegro	mon-tā-nā'-grō.
Montevideo	mon tē-vĭd'-ē-o.
Montmagny	mon-mahn-yē'.
Morocco	mō rŏk'-kō.
Moscow	mŏs'-kō.
Mozambique	mō-zăm-bēk'.
Mukden	mōōk'-den.
Munich	mū'-nik.
Muskoka	mŭs-kō'-kah.
Musquash	mŭs'-kwosh.
Musquodoboit	mŭsk-ō-dŏb'-ĭt.
Nagasaki	nah-gă-sah'-kē.
Nakusp	na-kŭsp'.
Nanaimo	nan-ī'-mō.
Nantes	nănts.
Napanee	nap'-ă-nē.
Nashwaak	năsh'-wawk.
Nassau	nas' saw.
Natal	nă-tahl'.
Nechako	nē-chak'-o.
Nepal	nē-pawl'.
Nevada	nē-vah'-dah.
Newfoundland	nū fŭnd-land'.
New Orleans	nū ŏr'-lē-anz.
New Zealand	nū-zē'-land.
Niagara	ni-ăg'-ă-ră.
Nicaragua	nik-ah-rah'-gwah.
Nice	nēs.
Nicobar	nik-o-bahr'.
Nicolet	nĭk-o-lā'.
Niger	nī'-jĕr.
Nîmes	nēm.
Niphon	nī-fon'.
Nipigon	nĭp'-ĭ-gon.
Nipissing	nĭp'-is-sing.
Nizhniy-Novgorod	nyez'-nye-nov'-go-rot.
Norwich	nor'-rij (nor'-ritch).
Nottawasaga	nŏt-tă-wă-saw'-gă.
Nova Scotia	nō'-vă-skō'-shă.
Nova Zembla	nō'-vă-zĕm'-blă.
Nyanza	nē-ahn'-zah.
Nyassa	nē-ahs'-sah.
Oahu	ō-ah'-hoo.
Ob-Irtysh	ob-ĭr'-tĭsh.
Obi	ō'-bē.
Oceania	ō-shē-ah'-nĭ-a.
Oder	ō-der.
Odessa	ō-des'-sa.
Oesel	ū'-sel.
Ohio	ō hī'-ō.
Okanagan	ō-kan-ah'-găn.
Okhotsk	ō-kŏtsk'.
Oklahoma	ŏk-lah-hō'-mah.
Omaha	ō'-mah-haw.
Onega	ō-nē'-ga.
Ontario	ŏn-tā'-rĭ-ō.
Oregon	ŏr'-e-gon.
Orillia	ō-ril'-lĭ-ah.
Orinoco	ō-rin-ō' kō.
Orleans	or'-lē anz.
Oromocto	or-ō-mŭk'-to.
Orontes	ō-rŏn'-tēz.
Ottawa	ot'-tah-wah.
Ouse	ōōz.
Pacific	pah-sĭf'-ik.
Padua	păd'-ū-a.
Palermo	pă-lĕr'-mō.
Palk	pawk.
Pamir	pah-mēr'.
Panama	pan-a-mah'.
Papua	pap'-oo-a.
Para	pah-rah'.
Paraguay	pah-ra-gwā'.
Paramaribo	păr-a-măr'-ĭ-bō.
Parana	pah-rah'-nah (nah).
Paria	pah'-re-ah.
Passamaquoddy	pas-să-mă-kwod'-dy.
Passaro	pahs-sah'-rō.
Patagonia	păt-ă-gō'-nĭ-a.
Pechili	pā-chē-lē'.
Pei-Ho	pā-hō'.
Peking	pē-kin'.
Pembina	pĕm'-bē-na.
Pennine	pen'-nīn.
Pennsylvania	pen-sĭl-vā'-nĭ-a.
Penobscot	pen-ŏb'-skŏt.
Pensacola	pen-sah-kō'-la.
Peoria	pē-ō'-rĭ-ah.
Perekop	pā-rā-kop'.
Pernambuco	pĕr-năm-bōō'-kō.
Persia	per'-shă (per'-zhă).
Peru	pē-roo'.
Petitcodiac	pet'-ē-kō-dē-ak'.
Philadelphia	fil-ă-del'-fe-a.
Philippine	fil'-ip-pin.
Pico	pē'-kō.
Pictou	pik'-tō.
Pisa	pē'-zah.
Plymouth	plim'-ŭth.
Pomona	pō-mō'-na.
Pompeii	pom-pā'-yē.
Pontiac	pŏn'te-ak.
Popocatepetl	pō-pō-kah-tā'-pĕt'l.
Portage la Prairie	pōr-tazh' lah prā'-rē.
Portneuf	pōrt-nŭf'.
Porto Rico	pōr'-tō rē'-kō.
Portugal	pōr'-tū-gal.

Name	Pronunciation
Potomac	pō-tō'-mak.
Potosi	pō-tō-sē', *or* po-tō'se.
Prague	prāg.
Pretoria	prē-tō'-re-ah.
Prussia	prŭsh'-ā.
Pueblo	pwĕb'-lō.
Punta Arenas	poon'-tah ah-rā'-nahs.
Putumayo	poo-too-mī'-ō.
Pyrenees	pĭr'-ē-nēz.
Quaco	kwaw'-kō.
Qu'Appelle	kăp-pĕl'.
Quebec	kwē-bĕk'.
Quesnel	ken'-nel.
Quinte	kwin'-te.
Quito	kē'-to.
Racine	rah-sēn'.
Raleigh	raw'-lē.
Rangoon	rahn-goon'.
Rappahannock	rap-pah-han'-nŭk.
Reading	rĕd'-ing.
Reggio	rĕd'-jō.
Reikjavik	rī'-kyah-vek.
Reims	rēmz.
Renous	rē-nōōs'.
Restigouche	rĕs-tĭ-goōsh'.
Rhodes	rōdz.
Richelieu	rē-shē-loo'.
Richibucto	rish-ĭ-bŭk'-to.
Rideau	rē-dō'.
Riga	rē'-gah.
Rimouski	rē-moōs'-kē.
Rio Grande	rē'-o grahn'-dā.
Rio Janeiro	rē'-o zhah-nā'-ro.
Rio Negro	rē'-o nā'-grō.
Ripon	rĭp'-ŭn.
Riviera	rē-vē-ā'-rah.
Rivière du Loup	rē-ve-ār' doo-loo'.
Roanoke	rō-ā-nōk'.
Rochdale	rŏtch'-dāle.
Rochefort	rōsh-for'.
Rochelle	rō-shĕl'.
Rochester	rŏtch'-ĕs-tĕr.
Rosario	rō-sah'-rē-o.
Rossignol	rŏs-sēn-yōl'.
Rothesay	rŏth'-sā.
Rouen	roo'-ĕn.
Roumania	roo-mā'-nĭ-a.
Russia	rŭsh'-a.
Saale	zah'-leh.
Saco	saw'-kō.
Sacramento	săk-rah-men'-tō.
Saghalien	sah'-gah-lēn'.
Saginaw	sag'-in-aw.
Saguenay	sag-ē-nā'.
Sahara	să-hab'-rah.
Saïgon	sī-gōn'.
St. Augustine	sānt aw'-gŭs-tēn.
St. Bernard	sānt bĕr'-nard.
St. Croix	sānt kroi'.
St. Denis	sahn deh-nē'.
St. Elias	sānt ē lī'-ăs.
St. Helena	sānt hĕ-lē'-na.
St. Hyacinthe	sānt hī'-a-sinth.
St. Louis	sānt loo'-is.
St. Malo	sahn mah-lō'.
St. Maurice	sahn mō-rēs'.
St. Pierre	sahn pē-ār'.
St. Roque	sahn rōk.
Sakhalin	sah-kah-lyn'.
Salamanca	sal-a-man'-ka.
Salisbury	sawlz'-bĕr-e.
Salonica	sah-lō-nē'-ke.
Samoa	sah-mō'-ā.
Samothraki	sah-mō-thrah'-kē.
San Blas	sahn blahs'.
San Diego	sahn dē-ā'-go.
San Francisco	sahn frăn-sĭs'-ko.
San Jose	sahn hō-sā'.
San Juan	sahn hoo-ahn'.
Santa Fe	sahn'-tah fā'.
Santiago	sahn-tē-ah'-go.
Saone	sōn.
Saskatchewan	săs-katch'-ē-wŏn.
Saskatoon	săs-kă-toon'.
Sault Ste. Marie	sōō sānt mā'-rē.
Savannah	sah-văn'-nah.
Scatari	skat-ā-rē'.
Scheldt	skĕlt.
Schenectady	skē-nĕk'-ta-dē.
Schleswig-Holstein	shlāz'-vig hōl'-stin.
Schoodic	skoo'-dik.
Schuylkill	skōōl'-kĭl.
Scilly	sil'-lē.
Scutari	skoo'-tah-rē.
Sedan	sē-dăn'.
Seine	sān.
Senegal	sen-ē-gawl'.
Seville	sē-vil' (sev'-il).
Seychelles	sā-shĕl'.
Shanghai	shang-hī'.
Shawenegan	shah-wĕn-ē-găn'.
Shediac	shĕd-e-ak'.
Shemogue	shem-ō-gwē'.
Shenandoah	shen-an-dō'-ah.
Shepody	shĕp'-ō-dē.
Shippigan	ship-pē-găn'.
Shubenacadie	shōō-ben-ăk'-ā-dē.
Shuswap	shŭs'-wap.
Siam	sī-am' (sē-am').
Sicamous	sik'-ā-moos.
Sicily	sis'-ĭ-lē.
Sierra Leone	se-ĕr'-rah lē-o'-ne.
Sierra Madre	se-ĕr'-rah mah'-drā.
Sierra Morena	se-ĕr'-rah mō-rā'-nah.
Sierra Nevada	se-ĕr'-rah ne-vah'-dah.
Silesia	sī-lē'-shĭ-a.
Sinai	sī'-nā (sī'-nī).
Singapore	sing-gā-pōr'.
Sioux	sōō.
Skager Rack	skag'-er rak'.
Skagway	skag'-way.
Slocan	slō-kăn'.
Smyrna	smŭr'-na.
Sofia	so-fē'-ah (so'-fē-yah).
Sokotra	sō-kō'-trah.
Solent	so'-lĕnt.
Somaliland	so-mah'-lē-land.
Sorel	sō-rĕl'.
Söul	seh-oōl'.
Soulanges	sōō-lahnzh'.
Souris	soo'-rē.
Spey	spā.
Spokane	spō-kăn'.
Sporades	spŏr'-ā-dēz.
Spree	sprā.
Stanovoi	stah-no-voi'.
Stettin	stĕt-tēn'.
Steveston	stēvs'-ton.
Stewiacke	stew'-ē-ak.
Stikine	stik-ēn'.
Stockholm	stŏk'-hōlm.
Stour	stoōr.
Strasburg	strahs'-boōrg.

Name	Pronunciation
Stromboli	strŏm'-bō-lē.
Stuttgart	stŭt'-gahrt.
Suakin	swah'-kēn.
Sudan	soō-dahn'.
Suez	soō-ez'.
Suleiman	soo-la-mahn'.
Sumatra	soo-mah'-trā.
Susquehanna	sŭs-kwē'-han'-nah.
Swansea	swon'-sē.
Swaziland	swah'-zē land.
Syracuse	sīr'-ah-kūs.
Syr Daria	sīr dahr'-ī-ah.
Syria	sīr'-i-a.
Tabusintac	tab-ū sin-tak'.
Tacoma	tah-kō'-mah.
Tadoussac	tah-doo-săk'.
Tahiti	tah-hē'-tē.
Tallahasse	tăl-lā-hăs'-se.
Tampico	tăm-pē'-kō.
Tananarivo	tah-nah-nah-rē'-vo.
Tanganyika	tahn-ghan-yē'-kah.
Tangier	tahn-jēr'.
Tantramar	tan-trah-mahr'.
Tasmania	taz-mā'-nī-a.
Tatamagouche	tat'-mah-goosh.
Taunton	tahn'-tŭn.
Taurus	taw'-rŭs.
Teherân	tē-hē-rahn'.
Tehuantepec	tā-wahn-tā-pĕk'.
Temiscouata	tĕm-ĭs-kwaw'-tah.
Teneriffe	tĕn-ĕr-if'.
Tennessee	tĕn-nĕs-sē'.
Terrebonne	tĕr-bŏn'.
Terre Haute	tĕr'-rē-hōt.
Thames	tĕmz.
Thebes	thēbz.
Theiss	tice.
Thian Shan	tē-ahn shahn'.
Tibet	tĭb-et' (tĭb'-et).
Ticino	tē-chē'-no.
Tientsin	te-en'-tsēn.
Tierra del Fuego	tē-ĕr'-rah dĕl fwā'-go.
Tiflis	tif-lēs'.
Timiskaming	tĭm-ĭs'-kă-ming.
Timor	tē-mōr'.
Titicaca	tit-ē-kah'-kah.
Tobago	tō-bā'-go.
Tobique	tō'-beek.
Tokyo	tō'-kē-o.
Tonquin	tŏn-kēn'.
Tormentine	tor'-men-tīne.
Torquay	tor-kē'.
Toulon	toō lōn'.
Toulouse	toō-looz'.
Tours	toōr.
Tracadie	trak'-a-dē.
Trafalgar	traf al-gahr' (trā-fahl'-gahr).
Transvaal	trans-vahl'.
Trieste	trē-ĕst'.
Tripoli	trĭp' o-lē.
Trois Pistoles	twah pēs-tōl'.
Trondhjem	trŏn'-yĕm.
Trossachs	trŏs'-aks.
Troyes	trwah.
Tunis	tū'-nis.
Turin	tū'-rĭn.
Turkestan	toōr-kēs-tahn.
Tyrol	tĭr'-ōl.
Ucayali	oō-kah-yah'-lē, *or* oo-kī-ah'-lē.
Uganda	oō-gahn'-da.
Uist	wist.
Ulleswater	ŭlz'-waw-ter.
Ungava	ung-gah'-vah.
Upsala	ŭp-sah'-lah.
Ural	ū'ral.
Uruguay	ū'-roō-gwā (oō-roō-gwī).
Utrecht	ū'-trĕkt.
Valdai	vahl-dī'.
Valencia Valentia	vah'-len'-shī-a.
Valenciennes	vah-lĕn-si-enz' (vah-lahn-si-on').
Valparaiso	vahl-pah-rī'-so.
Vancouver	van-koō'-ver.
Van Diemen's	van dē'-menz.
Vaudreuil	vō-drool' (vō-drū'-y).
Venezuela	vĕn-ez-wē'-lah.
Vera Cruz	vĕr'-ah krōōz.
Verchères	vĕr-shar'.
Vermont	vĕr-mŏnt'.
Versailles	vĕr-sālz (vĕr-sah'y).
Verte	vĕrt.
Vesuvius	vē-sū'-vĭ-ŭs.
Vienna	vē-ĕn'-nah.
Vindhya	vind'-yah.
Vistula	vĭs'-tū-la.
Vitoria	vē-to'-rē-ah.
Vladivostok	vlah-dē-vŏs-tŏk'.
Vosges	vōzh.
Wabash	waw'-băsh.
Wabigoon	waw'-bĭ-goōn.
Wallachia	wŏl-lā'-kĭ-a.
Warsaw	wawr'-saw.
Warwick	waw'-rik (wawr'-wik).
Wasatch	waw'-satch.
Washademoak	wŏsh-ā-dē-moik'.
Wear	wēr.
Weimar	wī'-mahr (vī'mahr).
Welland	wel'-land.
Wener	wā'-ner (vē'-ner).
Weser	vā'-zer.
Wetaskiwin	we-tas'-kĭ-wĭn.
Wetter	wet'-ter (vĕt'-ter).
Whycocomagh	why-kog'-o-mah.
Wichita	witch'-ĭ-taw.
Wiesbaden	ves-bah'-den.
Wight	wīt.
Winnipegosis	win-nĭ-pē-gō'-sis.
Wollaston	wŏl'-las-ton.
Woolwich	woōl'-itch (wool-ij).
Worcester	woōs'-ter.
Wyoming	wī-ō'-ming.
Xalapa	chah-lah'-pah.
Xeres	cher-es'.
Yablonoi	yah-blo noi'.
Yakutsk	yah-koōtsk'.
Yamaska	yah-mahs'-kah.
Yang tse Kiang	yăng-tsē-kĭ-ang'.
Yenisei	yĕn-ē-sā'-ē.
Yokohama	yō-kō-hah'-mah.
Yosemite	yō-sĕm'-ĭ-tē.
Youghal	yawl (yŏh'-hăl).
Yucatan	yoō-kah-tahn'.
Zaandam	zahn-dahm'.
Zacatecas	zahk-ā-tā'-kas.
Zambesi	zahm-bā'-zē (zahm-bē'-[illegible]).
Zante	zahn'-tē.
Zanzibar	zahn-zī-bahr'.
Zuider Zee	zī'-der zē.
Zurich	zoō'rik.